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**MALTING QUALITY OF BARLEY VARIETIES AND SELECTIONS
GROWN IN ROCKY MOUNTAIN AND WESTERN STATIONS IN 2000**

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This is a joint progress report of cooperative investigations being conducted in the Agricultural Research Service of the U.S. Department of Agriculture and State Agricultural Experiment Stations. It contains preliminary data that have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is primarily a tool available to cooperators and their official staffs and for those persons who have a direct and special interest in the development of improved malting barleys.

This report includes data furnished by the Agricultural Research Service as well as by the State Agricultural Experiment Stations. The report is not intended for publication and should not be referred to in literature citations nor quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

Samples malted and analyzed by the Cereal Crops Research Unit, Madison WI

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MALTING QUALITY OF BARLEY VARIETIES AND SELECTIONS GROWN AT THE ROCKY MOUNTAIN AND WESTERN STATIONS IN 2000

Introduction

At the Cereal Crops Research Unit, we malt barleys received from public sector breeders and evaluate each line for its commercial malting quality. We malt and analyze each submission as consistently as possible, which allows us to compare the lines with each other. Our objective is to provide accurate data and evaluations of new selections and to facilitate the development of improved malting barleys.

Materials

The 2209 samples upon which this report is based came from several locations; either as a part of the Western Regional Spring Barley Nursery or as experimental selections from several research programs. Individual breeders' experimental lines from stations in California, Idaho, Montana, Oregon, Washington and Wyoming were processed and evaluated.

Methods

Most of our analyses were performed according to the Methods of Analysis of the ASBC, 8th edition, 1992. Details of the analyses are listed in Appendix A.

We replaced our LECO FP-428 with a current FP-528 Nitrogen analyzer. The analytical chemistry used is the same, and our collaborative results have agreed with those from other laboratories. All other instrumentation remained the same as in the previous year.

Rankings and Quality Scores

The best performing entries in each table can be found by consulting the Overall Rank Value column. The rank values were determined by the quality scores that were generated for each submission, with the rank order proceeding from low (best) to high (poorest). The quality scores were computed for each line on the basis of the sum of its individually scored parameters. Numbers are assigned to each of the malt quality traits, and their magnitudes are related to how closely the trait values conform to what industry wants them to be. The closer the analytical data are to the ideal, the more points are awarded. The most important quality traits (extract, soluble protein, etc.) are awarded

more points than those of lesser importance. This gives a relative assessment of the overall performance of each line. The criteria used to generate the quality scores are listed in Table A1.

Western Regional Spring Barley Nursery – 2000

Nursery samples were received for malting quality evaluation from three experimental stations located in three states. Ten of the 26 entries (#17 - #26) were new in this year's nursery (Table 1).

These samples were germinated for 5 days, with rotation for 3 minutes each half hour. These conditions should yield malts having modification levels that are similar to those produced by industry. The malting conditions and analytical methods employed are listed in Appendix A. The criteria and numerical value assignments used to calculate the quality scores are listed in the same Appendix (Table A1).

The mean values for 11 quality factors are listed over the three stations located in the Western Region (Table 2) and over all varieties (Table 3). Individual station data are reported in Tables 4 through 6. The parentages of the nursery entries are listed in Table 1. Evaluations of data from individual locations and overall performance evaluations, derived primarily from Tables 2 and 3, are presented below.

Over half of the plump barleys from Aberdeen, ID (Table 4) had unacceptably high protein contents. The extract values were generally excellent, averaging nearly 80%, while soluble protein levels varied between 3.8 and 6.5%. Over half of the S/T ratios were unacceptably low, while six submissions had values that were too high. The diastatic power values fluctuated considerably, with ten values that were too high and eight that were too low. Over half of the α -amylase and β -glucan levels were too high. The best performers were 92AB5180, 98AB12362, 97AB8333, 95AB15156, Foster, BA2B96-5038 and Colter.

The barleys from Pullman, WA (Table 5) were very plump and generally had good protein contents. Their extract values were very good, with only two falling below the desired limit. Over half of the soluble protein levels were unacceptably low, and this was reflected in the S/T ratios, with two thirds of these values being too low. Most of the diastatic power values were good, but over half of the α -amylase levels exceeded the acceptable upper limits. The β -glucan levels were generally a bit high, with a third of them exceeding the desired limit. A few of the lines apparently modified well, however, with β -glucan levels near 100 ppm and SK-TR150, which had a value of 23 ppm, was

overmodified. The best performers were SK-CDC BOLD, BA6B94-8253, SK-TR150, ND15422, SK-TR346 and Stander.

Two thirds of the barleys from Powel, WY (Table 6) were thin and half of them had unacceptably high protein contents. Most of the soluble protein values were good, but two thirds of the S/T ratios were too low. Half of the diastatic power values fell outside of the desired limits, twelve being too high and four too low. Two thirds of the α -amylase and β -glucan values exceeded the desired limits. The best performers were ND15422, MT910189, BA2B96-5119 and SK-TR346. The SK-TR150 malt was apparently overmodified with our malting schedule and this reduced its quality score by several points.

Overall, the barleys grown at Aberdeen and Pullman were very plump (Table 2), while the entries grown at Powell ranged from very thin to very plump. The protein contents of the submissions from Pullman were generally very good, while those from Powell were higher, but still acceptable and those from Aberdeen were mostly too high. None of the extract values of the entries from Aberdeen, Pullman and Powell were significantly different, but there were more unacceptably low values in the Powell submissions than in those from the other locations. The soluble protein values of the lines grown at Aberdeen and Powell were generally very good, while those from Pullman were a bit too low. The submissions from Pullman yielded good diastatic power values, while the lines from Aberdeen and Powell tended to be above the desired limits. The α -amylase and β -glucan values from all locations were generally a bit high, although the β -glucan values from Pullman indicated that these samples had modified a bit better than those grown at the other locations. Samples from Pullman had the best quality scores, followed by those from Aberdeen, while the Powell samples gave the lowest scores.

Overall, most of these lines were plump, but the protein contents tended to be a bit high (Table 3). A quarter of the extract values averaged over 80% and nearly all were above the desired minimum of 78%. The soluble protein levels ranged from a bit high to four that were very low. The diastatic power values ranged from three that were too low to five that exceeded the desired limits, while most α -amylase values were too high. Half of the β -glucan levels were too high and only three of the values were near the ideal of 100 ppm. SK-TR150 consistently overmodified in these experiments, while the PB1 entries modified very poorly, as indicated by their high β -glucan levels. The best performers were ND15422, MT910189, SK-CDC BOLD, BA2B96-5038, SK-TR150 and SK-TR346.

Crop Year 2000 Evaluations

Submissions from California

2000 Two Row Preliminary Yield Trial – Davis

Table 7 – 21 Entries

Most of these plump barleys had low protein contents (perhaps too low). The extract values were generally good, although those of a quarter of the submissions fell below the minimum limit. Most soluble protein and diastatic power levels were too low. The α -amylase levels ranged from three that were too low to seven that exceeded the maximum limit. The β -glucan levels were quite variable, indicating there was a wide variety of modification levels. The best performers were SALAJO 1, 20 IB 54, CB 119, BCD 47 and BU 27.

Submissions from Idaho

1999 – 2000 Aberdeen Spring and Winter Drill Strip Series – Aberdeen

Table 8 – 15 Entries

Over a third of these plump barleys had unacceptably high protein levels. The extract values were generally good, while soluble protein levels ranged from good to too low. All but one of the S/T ratios were too low. Half of the amylolytic values were too high, while β -glucan levels ranged from very good to four that exceeded the desired limit. The best performers were 92AB5180 and 94AB1274.

1999-2000 Aberdeen Winter Barley Nurseries A and B – Aberdeen

Table 9 – 17 Entries

These plump barleys had excellent protein levels. However, half of the extract and most of the soluble protein values were too low. A third of the α -amylase and two thirds of the diastatic power values were too low. The β -glucan levels were generally high, with half exceeding the maximum desired limit. The best performers, which look quite promising, were 92AB1772, 88AB539B, 92AB1841, 92AB1810, 88AB536-B and 96AB474.

1999-2000 Aberdeen Winter Barley Nursery C – Aberdeen

Table 10 – 19 Entries

These plump barleys had very good protein contents. The extract values were generally good, while soluble protein levels ranged from too low to excellent. The S/T ratios ranged between eight that were too low and six that were too high. The diastatic values ranged between five that were too low and three that were above the desired limit. Half of the α -amylase values were too high, while β -glucan levels ranged from very good to a bit high. The best performers were 88AB536-B, 94AB1347, Spirit, 85AB216, 94AB1219 and 95AB2262. Many of these lines show good promise.

1999-2000 Aberdeen Winter Barley Nursery ORWB – Aberdeen

Table 11 – 30 Entries

Most of these barleys were plump and had good protein contents, but a third of their extract values were too low. The soluble protein levels ranged from unacceptably low to excellent, while most of the S/T ratios were too low. All but four diastatic power values were too low. A third of the α -amylase values were too low, while a third of the β -glucan levels were too high. The best performers were 88AB536, KAB50, KAB65, STAB171, STAB113, STAB120 and STAB7.

2000 Aberdeen Barley Nursery A – Aberdeen

Table 12 – 44 Entries

Over half of these plump barleys had unacceptably high protein contents. Most of the extract and soluble protein values were good, but three quarters of the S/T ratios were too low, due to the high total protein levels. The diastatic power values were generally good, but half of the α -amylase and most of the β -glucan levels were too high. The best performers were C46, C40, 93AB835, 95SR149C, C37 and 97AB7973.

2000 Performance of Winter Barley Lines in Maryland - MD

Table 13 – 4 Entries

These barleys were thin (two extremely thin) and only one line had good protein content. All of the extract values were very low and only 92AB1340 had an acceptable soluble protein level. The

diastatic power value for the 6-rowed barley, 92AB1340, was good, while the levels in the 2-rowed barleys were either too low (95AB2260, 95AB2262) or too high (94AB1347). Two of the α -amylase values were too high, while the β -glucan levels were generally good. None of these lines performed well at this location.

2000 Aberdeen Barley Nursery H – Aberdeen

Table 14 – 39 Entries

Two thirds of these plump barleys had unacceptably high protein contents. A third of the extract values were below the minimum limit. The soluble protein levels ranged from good to fifteen that were too low. Most of the S/T ratios were too low, while most β -glucan levels were too high. The amylolitic values were generally good. The best performers were 97AB6643, 96AB10328, 97AB6361, HE6890 and 98AB11402.

2000 Tetonia Barley Nursery A – Tetonia

Table 15 – 44 Entries

Three quarters of the barleys were too thin and nearly all had unacceptably high protein contents and low extract values. Half of the soluble protein levels were too low and when combined with the high total protein contents, this resulted in all S/T values being too low. Three quarters of the diastatic power and β -glucan levels were too high, while half of the α -amylase values exceeded the desired limit. None of these lines performed well.

1999-2000 Tetonia Spring Drill Strip Series – Tetonia

Table 16 – 6 Entries

Half of the entries were too thin and all of the 2-rowed submissions had unacceptably high protein contents. Two thirds of the extract and all of the soluble protein values were low. These lines were not well modified, as indicated by their high β -glucan contents. None of these submissions performed well.

2000 Tetonia Barley Nursery B – Tetonia

Table 17 – 31 Entries

Over half of these barleys were thin and all but two had unacceptably high protein contents. The soluble protein levels ranged from a bit low to most that were excellent. All but four extract values were unacceptably low, while most amylolitic and β -glucan levels were too high. The best performers were 85AB2323(Ozburn) and 95AB13058.

2000 Tetonia Barley Nursery C – Tetonia

Table 18 – 48 Entries

Most of these barleys were thin and had high protein contents. The soluble protein levels were generally low even though the total protein levels were high. This resulted in S/T ratios that averaged 10% below the minimum acceptable limit. Over half of the amylolitic and β -glucan levels were too high. None of these lines performed very well.

2000 Aberdeen Barley Nursery J – Aberdeen

Table 19 – 25 Entries

Most of these plump barleys had good protein contents and their soluble protein and extract values were generally very good. Even though the soluble protein and total protein contents were good, over half of the S/T ratios were unacceptably low. Over half of the diastatic power values were too low, while a third of the α -amylase levels were too high. Nearly all of the β -glucan levels were unacceptably high, indicating that these malts were under modified by our malting protocol. The best performers were 96AB9040, 94AB13449, 97AB9084 and 98AB12904.

2000 Aberdeen WSU Fine Mapping Series – Aberdeen

Table 20 – 68 Entries

Over half of these plump barleys had unacceptably high protein contents. Only 13 extract values exceeded the minimum limit and all of these were either Morex or started with an M designation. Half of the soluble protein levels were too low and this, combined with generally high total protein levels, resulted in all S/T ratios being too low. A quarter of the diastatic power values were too high, while

half were too low. Half of the α -amylase values were too low. None of these lines modified well with our malting protocol, as indicated by their unacceptably high β -glucan levels. The top performers were M1415R2 and M0108R2.

2000 Tetonia WSU Fine Mapping Series – Tetonia

Table 21 – 68 Entries

The majority of these entries were plump and had acceptable protein contents. All but two of the extract and all of the soluble protein values were below the desired minima. Over half of the amylolytic values were too low, while all of the β -glucan levels exceeded the desired limit. None of these lines performed well, including the experimental controls.

2000 Aberdeen Montana Series – Aberdeen

Table 22 – 24 Entries

Half of these plump barleys had unacceptably high protein contents. A third of the extract values were too low and half of the soluble protein levels fell below the desired limit. The diastatic power values were generally good, but half of the α -amylase values were too high. Most of the β -glucan levels were too high. The best performers were MT960101, MT960100 and MT960099. However, the α -amylase levels of these three lines were very high.

2000 Tetonia Non-replicated Series – Tetonia

Table 23 – 18 Entries

All of these thin barleys had unacceptably high protein contents. All of the extract, S/T and half of the soluble protein values were too low. The β -glucan and diastatic power values were generally high, while half of the α -amylase levels exceeded the upper limit. None of these submissions performed well.

2000 Tetonia B Nursery – Tetonia

Table 24 – 30 Entries

The protein contents of all of these thin barleys were unacceptably high and most of the extract values were below the minimum limit. The soluble protein and β -glucan levels were generally good, while most of the amylolitic values were unacceptably high. The best performer was 96RWA1222.

2000 Aberdeen B Nursery – Aberdeen

Table 25 – 30 Entries

These plump barleys had excellent protein contents and their extract and soluble protein levels were also very good. A quarter of the diastatic power values were too low, while a third of the β -glucan and two thirds of the α -amylase values were too high. The best performers were 95SR35E, 97ID1199, 95SR19D, 95SR149C, 95SR34A, Bancroft and 95SR132B. Many of the other lines also showed good malting potential.

2001 Yuma Series – Yuma, AZ

Table 26 – 1 Entry

This plump barley had an excellent protein level. The extract value was pretty good, but the soluble protein and amylolitic values were too low. The barley did not modify well, as indicated by its very high β -glucan level.

Submissions from Montana

2000 Experiment 220100, Irrigated Intrastate Trial – Bozeman

Table 27 – 59 Entries

Even though two thirds of these barleys were too thin, most had very good protein contents. Over half of the extract and soluble protein values were too low and the low soluble protein levels resulted in unacceptably low S/T ratios for two thirds of the samples. A third of the diastatic power values were too low, while a third of the α -amylase levels were too high. Most of these samples modified poorly,

resulting in very high β -glucan levels. The best performers were MT960101, MT910189, 6B932978 and B2L20-36. Of these lines, only MT960101 modified well, as indicated by its low β -glucan content.

2000 Experiment 310100, Early Yield Trial – Bozeman

Table 28 - 59 Entries

Over two thirds of these barleys were thin and half had unacceptably high protein contents. Most of the extract, soluble protein and S/T values were too low. The amylolitic values varied between too low and too high, with a third of the diastatic power values and half of the α -amylase contents outside of the desired limits. Most of these malts were poorly modified as indicated by their generally high β -glucan contents. The best performers were MT990023, MT990098, MT990068, MT990041 and MT960099.

2000 Irrigated Instate Experiment 221900 – Conrad

Table 29 – 59 Entries

Although a third of these barleys were too thin, their protein contents were very good. Nearly all of the soluble protein values were too low; so low that most of the S/T ratios were also too low, even with the good 'low' total protein values. Two thirds of the diastatic power values and one third of the α -amylase levels were too low. These samples were poorly modified by our malting protocol, as indicated by the generally high β -glucan levels. The best performers were MT981210 and 2B965038.

2000 Experiment 371900, Irrigated Malting Barleys Off Station – Conrad

Table 30 – 16 Entries

Over half of these barleys were thin, but the protein levels were very good. A third of the extract and half of the soluble protein values were too low. The amylolitic values were generally good, but the β -glucan contents were unacceptably high. The best performer was MN52.

2000 Experiment 370400, Irrigated Malting Barleys Off Station – Sidney

Table 31 – 16 Entries

Over half of these barleys were thin and most had unacceptably high protein contents. A quarter of the extract values were too low, while soluble protein levels ranged from excellent to four that were too high. Half of the diastatic power and three quarters of the α -amylase values were too high. Most of the β -glucan levels were higher than desired. The best performer was C37.

2000 Preliminary Yield Trial – Bozeman

Table 32 – 62 Entries

Half of these barleys were thin and half had unacceptably high protein contents. Half of the extract and soluble protein values were too low. A quarter of the diastatic power levels were too low, while a quarter of the α -amylase levels were too high. Most of the β -glucan levels exceeded the maximum limit. The best performers were 263, 217 and 248.

2000 Preliminary Yield Trial – Bozeman

Table 33 – 65 Entries

A third of these barleys were thin and about half had acceptable protein contents. Half of the extract values were good. Two thirds of the soluble protein levels were good, eighteen were to low and four exceeded the maximum limit. The diastatic power levels were generally good, but half of the α -amylase and β -glucan values were too high. The best performers were 304, 295, 315 and 301.

2000 Preliminary Yield Trial – Bozeman

Table 34 – 65 Entries

Over half of these barleys were too thin, and about half had acceptable protein contents. Half of the soluble protein and extract values were good, but most S/T ratios were below the minimum limit. Two thirds of the diastatic power values were good, while nearly half of the α -amylase levels were too high. Most of the β -glucan levels were above the maximum desired limit. The best performer was 388.

Submissions from Oregon

2000 Jari's Spring Barley Breeders Lines – Aberdeen, ID

Table 35 – 65 Entries

A third of these barleys were too thin and all had extremely high protein contents. All extract values were below the minimum limit, except for one Harrington submission. The soluble protein levels ranged from twelve that were too low to eleven that exceeded the maximum limit. The total protein levels were so high that all S/T ratios were too low. Half of the amylolitic and all β -glucan values were too high. None of these submissions performed well.

2000 Jari's Spring Barley Breeders Lines – Pullman, WA

Table 36 – 65 Entries

Two thirds of these barleys had unacceptably high protein levels. The soluble protein levels, combined with the high total protein contents, resulted in all S/T ratios, except that of Harrington, being unacceptably low. The amylolitic values were high in about a third of the submissions and there were nine diastatic power values from the OPS submissions that were too low. Most β -glucan levels were unacceptably high. The best performer was Harrington.

2000 Jari's Spring Barley Breeders Lines – Pendleton

Table 37 – 65 Entries

Nearly three quarters of these barleys were thin and all except five submissions had unacceptably high protein levels. All extract values, except for that of Harrington, were unacceptably low. Two thirds of the soluble protein levels were too low, and when combined with the high total protein contents, this resulted in all S/T ratios being unacceptably low. About half of the amylolitic values were too high, however those from the OPS submissions ranged from excellent to a bit low. Nearly all of the β -glucan levels were too high. The best performer was Harrington, but even this experimental control was deficient in its malt quality.

2000 Jari's Spring Barley Breeders Lines – Klamath Falls, ID

Table 38 – 65 Entries

Nearly all of these submissions had unacceptably high protein contents. The extract values were generally low, with only two lines above the minimum limit. A third of the soluble protein levels were too low and, when combined with the high total protein contents, this resulted in all but three S/T ratios being too low. The amylolitic values were generally a bit high, except for those of the OPS submissions, which were too low. Three quarters of the β -glucan levels were too high. The best performer was Harrington.

2000 Jari's Spring Barley Breeders Lines – Tule Lake, CA

Table 39 – 65 Entries

Most of these plump barleys had unacceptably high protein contents. Three quarters of the extract values were below the minimum desired limit. Over half of the soluble protein levels were too low and, when combined with the high total protein contents, this resulted in all S/T ratios being unacceptably low. The amylolitic levels ranged from good to a bit high, except for those of the OPS lines, which ranged from good to a bit low. Three quarters of the β -glucan levels were above the maximum limit. The best performers were BU38 and BU27.

2000 Pendleton Winter Barley Nursery – Pendleton

Table 40 – 37 Entries

Most of these barleys were very plump, with protein contents that were quite low - perhaps too low in some submissions. The extract values were generally good, with some lines exceeding 84%. Two thirds of the soluble protein values were too low, but because of the very low total protein contents, the S/T ratios were generally too high. The diastatic power values were very low, while a quarter of the α -amylase values were above the maximum limit. The β -glucan levels were generally good, with only five that were too low and five that exceeded the maximum limit. The best performers were ORWB1 16 STAB7, ORWB1 14 KAB 65, ORWB1 12 KAB51, ORWB1 9 KAB43, ORWB1 20 STAB47, ORWB1 27 STAB 171 and ORWB1 25 STAB120.

2000 Corvallis Winter Barley Nursery – Corvallis

Table 41 – 15 Entries

Even though these barleys were thin, they had very low protein contents. The extract values were excellent, but half of the soluble protein levels were too low. All of the diastatic power values were unacceptably low, while a third of the α -amylase values were too high. The β -glucan levels were generally very good, but some values were low enough to indicate that those malts may have been over modified. These samples did not score particularly well due to their thinness, low diastatic power and high S/T values. If a breeder wanted to incorporate low protein and high extract values into their program, ORWB1 14 KAB 65 and ORWB1 12 KAB51 should be quite promising parents.

2000 Pullman Winter Barley Nursery – Pullman, WA

Table 42 – 16 Entries

The protein contents of these plump barleys ranged from a bit low to excellent. The extract values were phenomenal, averaging 83.9%. The soluble protein and β -glucan levels were generally good. Nearly all of the diastatic power values were unacceptably low, while the α -amylase levels ranged from good to a bit high. The best performers were ORWB1 15 KAB 68, ORWB1 11 KAB 50, ORWB1 17 STAB 33, ORWB1 12 KAB 51 and ORWB1 24 STAB 113, which looked very good.

2000 Spring Barley Nurseries from Aberdeen, ID; Tule Lake, CA; Pendleton and Corvallis

Table 43 – 62 Entries

Most of these barleys had unacceptably high protein contents, except for the last five submissions, which were winter barleys that had rather low protein levels. Over half of the extract values were too low and the soluble protein levels ranged from six that were too low to thirty-eight that exceeded the upper limit. Over half of the diastatic power values were too high, which was not unexpected considering the high total protein contents. Over half of the α -amylase values were unacceptably high, while the β -glucan levels ranged from very good to extremely high. The best performers were ORSB103 B2L20-36-1, ORSB94 SAL+AJP 10 and WBFAC 4 STAB 34.

Submissions from Washington

2000 State Uniform Nursery – Royal Slope

Table 44 – 34 Entries

Nearly two thirds of these barleys were too thin and had unacceptably high protein contents. Three fourths of the extract values were below the desired limit, while most β -glucan levels were too high. Over half of the soluble protein levels were too low and this, when combined with the high total protein contents, resulted in all but three S/T ratios being too low. Two thirds of the diastatic power values were too low, while half of the α -amylase values were too high. The best performer was 98NZ226.

2000 Preliminary State Nursery – Royal Slope

Table 45 – 41 Entries

Most of these submissions had unacceptably high protein contents and all of their extract values fell below the desired limit. Most of the soluble protein and S/T values were too low. Half of the diastatic power values were too low, but α -amylase values were generally quite good. All of the β -glucan levels were unacceptably high, indicating that these barleys were not well modified. The best performer was WA13291-97, but its low extract values would preclude it from commercial use.

2000 Malting Barley Nursery – Royal Slope

Table 46 – 20 Entries

A quarter of these plump barleys had unacceptably high protein contents, and half of the extract values were too low. Most of the soluble protein values were also low and, as a result, all but three of the S/T ratios fell below the desired limit. The diastatic power values ranged between eight that were too low and three that exceeded the upper limit, while most α -amylase values were good. The β -glucan levels were generally too high, indicating that these samples were not well modified. The best performers were Viskosa, Lux, Merit and Harrington.

2000 P-ANT 6 Row Nursery – Royal Slope

Table 47 - 30 Entries

Most of these plump barleys had high, but acceptable, protein contents. All but two of the extract values were too low. The soluble protein levels were generally good but, when combined with the higher total protein contents, resulted in two thirds of the S/T ratios being unacceptably low. Half of the diastatic power values were too low, while two thirds of the α -amylase values were too high. All but three β -glucan levels were unacceptably high. The best performers were 99NZ316 and 99NZ028.

2000 P-ANT 2 Row Nursery #1 – Royal Slope

Table 48 – 30 Entries

Half of these barleys were thin and had unacceptably high protein contents. Half of the extract, soluble protein and diastatic power values were too low. Half of the α -amylase and most of the β -glucan values were too high. The best performers were 99NZ523, 99NZ493, 99NZ361 and 99NZ505.

2000 P-ANT 2 Row Nursery #2 – Royal Slope

Table 49 – 22 Entries

Two thirds of these barleys were too thin and all but one had unacceptably high protein contents. All but two of the extract values were below the desired limit. Half of the soluble protein levels were too low and this, combined with the high total protein contents, resulted in all but two S/T ratios being unacceptably low. The diastatic power values ranged from eight that were too low to four that exceeded the desired limit. A third of the α -amylase and all of the β -glucan values were too high. None of these lines performed well.

2000 Spring Yield Nursery #1 – Pullman

Table 50 - 30 Entries

A third of these plump barleys had unacceptably high protein contents and over half of the extract values were below the desired limit. Two thirds of the soluble protein and nearly all of the S/T values were too low. The diastatic power values ranged between 15 that were too low to five that exceeded

the maximum limit. A quarter of the α -amylase and two thirds of the β -glucan levels were too high. The best performers were Morex, Harrington, and WA9262-98.

2000 Spring Yield Nursery #2 – Pullman

Table 51 - 9 Entries

Most of these barleys were plump and had good protein contents. A dozen extract values fell below the desired limit, while eleven soluble protein levels were too low. Over half of the diastatic power values were too low, while a third of the α -amylase values were a bit too high. A third of the β -glucan levels were unacceptably high. The best performers were Morex, Harrington, WA8023-98, WA7770-98 and WA8006-98.

2000 Spring Yield Nursery #3 – Pullman

Table 52 – 26 Entries

Most of these plump barleys had good protein contents, but half of the extract, diastatic power and soluble protein values were too low. Three quarters of the S/T ratios were below the minimum limit and half of the β -glucan levels were too high. The best performers were Harrington, Morex, WA9263-98 and WA7379-98. However, the enzyme levels in WA9263-98 and WA7379-98 would preclude these submissions from commercial consideration.

2000 Spring Yield Nursery #4 – Pullman

Table 53 – 27 Entries

Nearly all of these submissions were plump, with excellent low protein contents. Two thirds of the extract and most of the soluble protein and S/T values were unacceptably low. Three quarters of the diastatic power values were too low, while most of the α -amylase values were good. Half of the β -glucan levels were too high. The best performers were Harrington, WA10645-97, Morex and WA10642-97.

2000 Brazil Nursery – Pullman

Table 54 – 24 Entries

All but five of these plump barleys had unacceptably high protein contents. Most of the extract, soluble protein and S/T values were unacceptably low. Half of the diastatic power values were too low, while three quarters of the β -glucan levels were too high. The best performer was Harrington, and none of the Brazilian lines show much promise.

2000 Single Rep Nursery #1 - Pullman

Table 55 – 35 Entries

Most of these plump barleys had good protein contents. Half of the extract and soluble protein values were too low, while most of the S/T ratios fell below the minimum limit. A third of the diastatic power values were too low, while half of the α -amylase values exceeded the desired limit. The β -glucan levels ranged from quite low to a third that exceeded desired limits. The best performers were WA8569-99, WA9701-99, WA9750-99 and WA8145-99.

2000 Single Rep Nursery #2 – Pullman

Table 56 – 35 Entries

Most of these plump barleys had good protein contents, but half of the extract values were too low. Over half of the soluble protein values fell below the desired limits and nearly all of the S/T ratios were too low. About half of the diastatic power values were too low, while half of the α -amylase values were too high. The β -glucan levels ranged between a couple values that were quite low to nine that exceeded the maximum limit. The best performers were WA7996-99, WA11353-99 and WA9723-99.

2000 Single Rep Nursery #3 – Pullman

Table 57 – 35 Entries

A third of these plump barleys had unacceptably high protein contents, while over half of the extract and soluble protein values were too low. Half of the diastatic power levels were too low, while fourteen of the α -amylase and β -glucan values exceeded desired limits. The best performers were Morex, Harrington and WA9434-99.

2000 State Uniform Nursery – Pullman

Table 58 –32 Entries

Most of these plump barleys had excellent protein contents and good extract values. Nearly three quarters of the soluble protein, diastatic power and S/T values were unacceptably low, while the α -amylase values were generally quite good. Half of the β -glucan levels were too high. The best performers were 98NZ226, 98NZ234, Bancroft and WA12953-95. WA7942-96 also scored well, but its β -glucan value was very high.

2000 Preliminary State Nursery – Pullman

Table 59 – 30 Entries

The protein contents of these plump barleys were generally good. Two thirds of the extract and diastatic power values were too low. Most of the soluble protein and S/T values were below the minimum limits. The α -amylase levels were generally good, while β -glucan levels were too high, indicating that these malts were poorly modified. The best performers were WA7908-96, WA10718-97 and Harrington.

2000 Malt QTL Nursery #1 – Pullman

Table 60 - 39 Entries

Most of these barleys were plump and had good protein contents. All submissions beginning with S were Steptoe – like and had poor malting quality. The submissions beginning with M (Morex – like) showed much more promise, with good extract, soluble protein and amyloitic values. However, nearly all of the β -glucan levels were a bit too high. The best performers were M0549, M0107, M0402 and M0108.

2000 Malt QTL Nursery #2 – Pullman

Table 61 – 39 Entries

Most of these plump barleys had good protein levels. The extract and soluble protein levels were generally good, except for those submissions whose numbers began with an S. Over half of the diastatic power and most of the β -glucan values were too high. Most of the α -amylase levels were

good. The best performers were M1415, M1128, M0542, M1521 and M1502. Many of the other lines performed quite well, with nearly half of the submissions achieving quality scores of 40 or greater – all of these beginning with M.

2000 Malt QTL Nursery #3 – Pullman

Table 62 – 40 Entries

Most of these barleys were plump and had excellent protein contents. Two thirds of the extract and soluble protein values were too low. Over half of the amylolitic values were low, while two thirds of the β -glucan levels exceeded the maximum limit. The best performers were M0223, M208, M1444, M0402, M0105, M0902 and M0109.

2000 Single Rep Nurseries #1 and #2 – Pullman

Table 63 – 50 Entries

Most of these barleys were plump and had good protein contents. The extract values were generally good, but soluble protein levels tended to be a bit low. The diastatic power levels ranged from very low to a couple that exceeded the maximum limit, while over half of the α -amylase values were unacceptably high. The β -glucan levels tended to be high, with over half exceeding the maximum limit. The best performers were 2000NZ363, 2000NZ515 and 2000NZ197.

2000 HB QTL Regular Malting Analysis - Pullman

Table 64 – 54 Entries

Almost half of these barleys were too thin and all of their protein contents, including those of the experimental controls, were unacceptably high. Most of the extract values fell below the desired minimum, while soluble protein levels were generally very good. The diastatic power values ranged from good to a bit high, while most of the α -amylase values exceeded the maximum limit. These barleys did not modify well, as indicated by their very high β -glucan levels. None of these lines performed well.

Entries in the Western Regional Spring Barley Nursery - 2000 Crop

Table 1

Entry No.	New Entry	Id	Cultivar or Selection	Rowed	Parentage
1	CI 15773		MOREX	6	Cree/Bonanza
2	PI 564743		STANDER	6	Robust 2*/3/Cree/Bonanza//Manker/4/Robust/Bumper
3	SK 76333		HARRINGTON	2	Klages/3/Gazelle/Betzes//Centenial
4	BA6B93-2978		BA6B93-2978	6	6B86-3517/Excel
5	WA9504-94		WA9504-94	2	WA7190/Maresi
6	MT910189		MT910189	2	ND7293/Bearpaw
7	WA11825-95		WA11825-95	2	9035-84/Baronesse
8	SK-TR150		TR150	2	WM861-5/TR118
9	ND15477		ND15477	6	ND9712//Stander/ND12200
10	PB1-95-2R-517		PB1-95-2R-517	2	PB1-88-2R-801/VD403582
11	PB1-95-2R-A629		PB1-95-2R-A629	2	PB1-88-2R-801/VD403582
12	OR2967102		OR2967102	2	Harrington/Orca//D172(Shyri/Galena)
13	BA6B94-8253		BA6B94-8253	6	B1614/Stander
14	93AB859		93AB859	2	84Ab2974/Harrington
15	MTLB-30		VALIER	2	Lewis/Baronesse
16	MTLB-05		MTLB-05	2	Lewis/Baronesse
17	X PB1-97-2R-7090		PB1-97-2R-7090	2	
18	X WA11801-95		WA11801-95	2	WA9035-84/Baronesse
19	X WA11832-95		WA11832-95	2	WA9035-84/Baronesse
20	X BA6B95-2482		BA6B95-2482	6	6B89-2126/ND10981
21	X BA2B96-5038		BA2B96-5038	2	2B89-4616/TR226
22	X BA2B96-5119		BA2B96-5119	2	2B90-5066/TR129
23	X 2ND17274		2ND17274	2	Conlon/ND15238
24	X ND15422		ND15422	6	ND9712//ND11646/Stander
25	X SK-CDC BOLD		CDC BOLD	2	
26	X SK-TR346		TR346	2	

WESTERN REGIONAL SPRING BARLEY NURSERY - 2000 Crop

Table 2 - Station Means* of Barley and Malt Quality Factors for 26 Varieties or Selections**.

Location	Barley										
	Kernel		Barley		Malt		Wort		Barley		
	Weight (mg)	on 6/64" (%)	Color (Agtron)	Extract (%)	Color	Protein	Protein	S/T	DP (°)	Alpha- amylase (20° DU)	Beta- glucan (ppm)
Aberdeen, ID	44.3 A	95.0 A	65 B	79.5 A	1.7 B	14.2 C	5.14 A	37.7 A	138 B	61.2 A	362 B
Pullman, WA	41.0 B	93.1 A	68 AB	79.3 A	1.6 B	12.4 A	4.44 B	37.5 A	121 A	63.7 A	245 A
Powell, WY	35.2 C	73.0 B	70 A	79.0 A	1.4 A	13.3 B	4.89 A	38.8 A	142 B	65.3 A	320 AB

* Within each column, means followed by the same letter are not significantly different ($\alpha=0.05$), according to Duncan's Multiple Range test.

** MOREX, STANDER, HARRINGTON, BA6B93-2978, WA9504-94, MT910189, WA11825-95, SK-TR150, ND15477, PB1-95-2R-517, PB1-95-2R-A629, OR2967102, BA6B94-8253, 93Ab859, VALIER, MTLB-05, PB1-97-2R-7090, WA11801-95, WA11832-95, BAB95-2482, BA2B96-5038, BA2B96-5119, 2ND17274, ND15422, SK-CDC BOLD, SK-TR346

WESTERN REGIONAL SPRING BARLEY NURSERY - 2000 Crop

Table 3 - Varietal Means* of Barley and Malt Quality Factors for 3 Stations**.

Variety or Selection	Rowed	Barley		Malt		Barley		Wort		S/T (%)	DP (°)	Alpha- amylase (20° DU)		Beta- glucan (ppm)		Ave. Quality Score	Overall Rank
		Kernel Weight (mg)	on 6/64 (%)	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Protein (%)	Wort Protein (%)	Alpha- amylase (20° DU)	Beta- glucan (ppm)		Alpha- amylase (20° DU)	Beta- glucan (ppm)				
MOREX	6	35.8	BC	83.8 AB	71.7 ABCDE	79.0 DEFGHI	1.4 ABC	13.8 AB	5.15 ABCDE	38.9 DEFGHI	162 BC	62.6 DEF	306 BCDEF	33	12		
STANDER	6	36.3	BC	87.4 AB	70.7 ABCDEF	80.2 BCDE	1.6 ABCDE	13.1 AB	5.87 AB	46.5 B	152 BCD	79.1 AB	248 CDEF	36	9		
HARRINGTON	2	38.0	ABC	75.1 AB	64.3 CDEFGHI	78.6 EFGHIJ	1.2 A	14.2 AB	4.86 DEFG	36.0 GHJK	136 CDEF	66.2 DE	303 BCDEF	25	17		
BA-6B93-2978	6	33.4	C	76.2 AB	73 ABCDE	79.1 DEFGHI	1.4 ABC	13.1 AB	5.17 ABCDE	40.4 CDEFG	179 AB	77.1 BC	284 BCDEF	32	14		
WA9504-94	2	38.0	ABC	78.6 AB	55 I	78.0 GHIJK	2.0 CDE	14.1 AB	4.40 EFGH	32.4 K	132 DEF	43.5 H	440 B	27	16		
MT910189	2	45.6	AB	92.2 AB	70.7 ABCDEF	80.9 ABC	1.2 A	12.3 AB	4.79 DEFG	40.4 CDEFG	131 DEFG	68.4 CD	294 BCDEF	41	2		
WA118525-95	2	38.0	ABC	86.7 AB	70 ABCDEFG	79.0 DEFGHI	1.5 ABCD	11.8 A	4.06 GH	36.4 EFGHIJK	82.2 J	53.8 FG	259 BCDEF	28	15		
SK-TR150	2	43.8	AB	95.2 AB	69 ABCDEFG	80.6 BCD	1.5 ABCD	12.1 AB	5.09 BCDEF	44.5 BC	133 DEF	79.9 AB	46 G	39	5		
ND15477	6	35.6	BC	89.0 AB	77.7 A	79.5 CDEFGHI	1.4 ABC	12.9 AB	4.87 DEFG	39.4 DEFGH	175 AB	60.9 DEF	143 FG	37	8		
PB1-95-2R-517	2	41.6	ABC	86.2 AB	59.3 GHI	76.3 K	2.1 DE	14.0 AB	3.67 H	28.1 L	83.6 IJ	38.5 H	648 A	14	26		
PB1-95-2R-A629	2	42.7	ABC	84.8 AB	59.7 FGHI	76.9 JK	2.2 E	14.3 AB	3.73 H	27.6 L	99 HIJ	42.5 H	595 A	22	21		
OR2967102	6	40.6	ABC	67.7 B	69 ABCDEFG	77.7 IJK	1.4 ABC	14.2 AB	5.03 CDEF	36.3 EFGHIJK	191 A	87.9 A	269 BCDEF	19	25		
BA6B94-8253	6	38.7	ABC	91.6 AB	70.7 ABCDEF	79.1 DEFGHI	1.7 ABCDE	13.6 AB	5.35 ABCD	40.8 CDEF	170 AB	62.1 DEF	243 CDEF	37	7		
93AB859	2	43.2	ABC	87.5 AB	62.7 DEFGHI	79.8 CDEFG	2.2 E	13.4 AB	4.86 DEFG	37.8 DEFGHIJ	150 BCDE	63.2 DEF	413	24	18		
VALIER	2	38.4	ABC	82.8 AB	64.7 CDEFGHI	78.2 FGHIJ	1.3 A	14.6 B	4.63 DEFG	33.5 JK	135 CDEF	66.1 DE	413 BC	20	23		
MTLB-05	2	38.7	ABC	82.3 AB	62.3 EFGHI	78.5 EFGHIJ	1.4 ABC	13.9 AB	4.65 DEFG	34.5 IJK	135 CDEF	69.0 CD	431 B	21	22		
PB1-97-2R-7090	2	47.5	A	94.8 AB	56.7 HI	78.8 DEFGHI	1.4 ABC	14.3 AB	4.78 DEFG	34.8 HIJK	137 CDEF	63.0 DEF	406 BC	24	18		
WA11801-95	2	39.8	ABC	81.1 AB	66 CDEFGH	77.9 HIJK	1.7 ABCDE	14.0 AB	4.68 DEFG	34.2 JK	118 FGH	58.6 DEF	360 BCD	23	20		
WA11832-95	2	40.5	ABC	82.5 AB	70.3 ABCDEFG	78.0 GHIJK	1.3 AB	13.6 AB	4.30 FGH	32.1 K	75.7 J	46.0 GH	415 BC	20	24		
BAB95-2482	6	36.1	BC	90.9 AB	74.7 ABC	79.2 CDEFGHI	1.7 ABCDE	13.2 AB	4.55 DEFG	36.1 FGHIJK	171 AB	55.6 EF	282 BCDEF	35	11		
BA2B96-5038	2	45.1	AB	96.2 AB	65.7 CDEFGHI	82.5 A	1.9 BCDE	12.2 AB	5.92 A	50.7 A	122 EFGH	86.2 AB	128 FG	40	4		
BA2B96-5119	2	42.2	ABC	94.0 AB	66.3 BCDEFGH	80.0 CDEF	1.5 ABCD	12.6 AB	4.75 DEFG	38.8 DEFGHI	111 FGHI	67.4 CD	279 BCDEF	33	13		
2ND17274	2	44.2	AB	98.0 A	70.3 ABCDEFG	79.7 CDEFGH	1.6 ABCDE	14.2 AB	5.71 ABC	41.8 CD	120 FGH	69.1 CD	331 BCDE	36	9		
ND15422	6	37.2	BC	89.7 AB	77.3 AB	79.6 CDEFGH	1.4 ABC	12.5 AB	4.89 DEFG	39.9 DEFG	176 AB	60.9 DEF	174 EFG	43	1		
SK-CDC BOLD	2	43.3	ABC	88.6 AB	73.7 ABCD	81.9 AB	1.6 ABCDE	12.5 AB	5.20 ABCDE	44.5 BC	102 GHIJ	61.9 DEF	204 DEFG	41	3		
SK-TR346	2	40.0	ABC	91.4 AB	72.7 ABCDE	81.0 ABC	1.4 ABC	11.8 A	4.64 DEFG	41.0 CDE	119 FGH	66.0 DE	127 FG	39	6		

* Within each column, means followed by the same letter are not significantly different ($\alpha=0.05$), according to Duncan's Multiple Range test.

** Aberdeen, ID; Pullman, WA and Powell, WY

2000 WESTERN REGIONAL SPRING BARLEY NURSERY AND ADDITIONS - ABERDEEN, ID

Table 4

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)	amylase (ppm)	glucan (ppm)	Score	Rank
3026	MOREX	6	39.4	94.6	72	79.8	1.3	2	14.1	5.26	37.7	186	59.9	299	32	21
3027	STANDER	6	39.9	95.0	70	81.1	1.6	1	13.7	6.28	47.2	153	77.1	272	37	11
3028	HARRINGTON	2	41.1	*83.4	62	78.4	1.2	1	15.2	4.68	33.1	117	53.2	404	28	27
3029	BA-6B93-2978	6	36.9	94.2	74	80.5	1.4	1	13.5	5.71	43.0	188	76.7	342	35	15
3030	WA9504-94	2	43.5	94.9	55	79.5	2.2	2	13.6	4.56	34.4	125	42.2	458	39	8
3031	MT910189	2	49.2	94.9	66	80.8	1.2	1	13.3	5.00	39.3	130	68.1	450	35	15
3032	WA118525-95	2	42.5	91.9	57	78.6	1.4	1	13.3	4.56	34.8	90	55.9	287	31	22
3034	SK-TR150	2	46.1	94.9	58	79.3	1.7	1	14.8	5.84	41.0	156	78.7	96	31	22
3035	ND15477	6	38.5	94.8	76	79.4	1.4	1	14.4	5.29	38.2	188	60.6	158	29	25
3036	PB1-95-2R-517	2	48.4	97.2	56	76.7	1.6	1	15.0	3.85	26.7	89	38.2	772	16	37
3037	PB1-95-2R-A629	2	48.8	96.1	53	77.4	2.2	2	14.9	4.03	28.4	100	47.2	737	22	34
3038	OR2967102	6	48.5	94.8	63	78.7	1.3	1	14.6	5.25	36.8	186	76.9	275	26	30
3039	BA6B94-8253	6	40.7	95.4	72	79.6	2.0	1	14.8	5.95	42.1	175	60.0	262	34	18
3040	93AB859	2	47.9	95.2	64	80.2	n.d.	3	14.2	5.18	37.8	151	60.0	511	20	36
3041	VALIER	2	42.6	94.4	66	78.6	1.4	1	15.0	4.93	35.2	135	62.5	439	27	28
3042	MTLB-05	2	43.2	95.4	64	79.0	1.6	1	14.5	5.07	36.3	132	65.0	549	27	28
3043	PB1-97-2R-7090	2	50.0	96.3	62	78.7	1.7	1	14.8	5.22	36.5	134	64.9	411	23	32
3044	WA11801-95	2	45.3	97.8	67	78.8	2.2	2	13.9	4.84	35.4	115	54.3	368	33	20
3045	WA11832-95	2	45.0	94.2	72	78.8	1.6	1	13.7	4.39	32.3	74	42.8	398	23	32
3046	BAB95-2482	6	39.2	94.7	71	79.7	2.0	2	13.8	4.70	36.8	185	49.2	301	37	11
3047	BA2B96-5038	2	49.7	98.0	60	83.3	1.9	1	11.7	5.86	50.9	117	85.1	181	45	4
3048	BA2B96-5119	2	46.1	96.4	63	79.1	1.6	1	14.2	5.18	36.6	124	64.6	348	26	30
3049	2ND17274	2	48.5	98.8	68	79.5	1.6	1	15.3	5.95	40.6	113	54.3	488	38	9
3050	ND15422	6	41.0	96.2	77	79.5	1.3	1	13.9	5.34	39.4	199	59.4	176	34	18
3051	SK-CDC BOLD	2	46.9	93.9	68	81.7	1.6	1	14.6	5.51	40.6	106	62.7	255	37	11
3052	SK-TR346	2	44.0	96.6	66	80.5	1.4	1	13.6	5.19	38.6	132	70.4	165	29	25
3054	B1614	6	40.4	94.0	70	79.8	1.6	1	14.2	5.84	43.8	160	60.4	207	37	11
3055	COLTER	6	42.0	90.4	65	81.4	1.4	1	10.5	4.23	42.3	99	48.2	272	42	7
3056	FOSTER	6	41.3	97.2	69	80.2	1.5	1	12.8	5.45	45.3	156	79.3	269	45	4
3057	92AB5180	6	40.8	90.1	59	81.5	1.5	1	11.7	5.26	46.7	140	59.6	263	53	1

Table 4

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
3058	93AB375	6	41.4	94.7	64	83.9	1.7	1	11.4	5.65	50.7	120	67.4	262	38	9
3059	95AB15156	6	39.1	93.1	68	82.2	1.5	1	12.1	5.50	46.3	146	67.2	180	45	4
3060	96AB10452	6	39.9	96.2	70	81.0	1.8	1	13.6	6.51	48.6	131	67.1	334	31	22
3061	96AB10468	6	39.3	90.7	69	80.4	1.2	2	11.6	3.80	34.5	123	42.2	303	35	15
3062	97AB8333	6	37.0	91.0	64	81.2	n.d.	3	11.8	4.74	40.9	121	55.6	277	49	2
3063	98AB12362	6	41.0	97.2	77	81.0	1.7	2	12.5	5.28	43.8	171	58.4	106	49	2
3064	98AB12399	6	41.1	95.9	75	77.9	1.7	2	12.3	4.17	35.3	98	39.1	322	21	35
3033	HARRINGTON MALT CHECK	2	39.5	95.1	75	81.6	1.5	1	11.5	5.54	51.4	121	64.0	69	42	
3053	HARRINGTON MALT CHECK	2	40.6	94.3	74	81.6	1.4	1	10.8	5.42	51.1	113	71.4	125	48	
Minima			36.9	90.1	53	76.7	1.2		10.5	3.80	26.7	74	38.2	96	16	
Maxima			50.0	98.8	77	83.9	2.2		15.3	6.51	50.9	199	85.1	772	53	
Means			43.1	94.9	66	79.9	1.6		13.6	5.14	39.4	137	60.4	330	33	
Standard Deviations			3.8	2.1	6	1.5	0.3		1.2	0.66	5.7	32	11.8	150	9	
Coefficients of Variation			8.9	2.2	9	1.9	17.0		9.1	12.77	14.4	24	19.6	46	26	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS, Aberdeen, ID

2000 WESTERN REGIONAL SPRING BARLEY NURSERY - PULLMAN, WA

Table 5

Lab No.	Variety or Selection	Rowed	Kernel Weight 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank	
3192	MOREX	6	35.1	82.2	76	78.0	1.3	1	13.4	4.45	35.7	148	57.2	222	31	17
3193	STANDER	6	36.7	90.9	73	79.9	1.5	1	12.9	5.29	43.4	143	80.0	162	46	5
3194	HARRINGTON	2	42.1	92.0	67	79.3	1.1	1	13.2	4.64	36.7	139	78.0	229	35	11
3195	BA6B93-2978	6	34.9	82.4	76	78.3	1.2	1	12.5	4.55	38.1	163	76.6	212	33	14
3196	WA9504-94	2	39.1	92.0	56	78.5	2.1	2	13.6	4.06	31.2	129	42.8	395	26	21
3197	MT910189	2	46.1	97.2	72	80.9	1.2	1	11.7	4.45	39.6	132	71.0	195	43	7
3198	WA11825-95	2	38.0	91.9	73	79.3	1.8	2	10.6	3.67	36.9	71	51.7	123	33	14
3199	SK-TR150	2	45.5	97.6	68	80.4	1.5	1	11.7	4.71	43.7	127	82.0	23	48	3
3200	ND15477	6	34.7	87.4	78	79.7	1.6	2	11.5	4.39	40.0	152	58.8	72	42	8
3201	PB1-95-2R-517	2	40.4	88.2	64	77.5	n.d	3	11.4	3.36	31.3	74	40.0	415	21	26
3203	PB1-95-2R-A629	2	42.1	91.9	66	78.1	n.d	3	11.5	3.30	29.6	86	39.8	463	28	18
3204	BCD 47	6	44.1	94.5	70	78.9	1.3	1	12.7	4.53	36.4	176	79.5	105	28	18
3205	BA6B94-8253	6	40.6	96.0	71	79.2	1.7	1	12.6	5.05	41.3	147	64.9	128	50	2
3206	93AB859	2	45.7	98.1	63	80.1	2.6	2	12.0	4.41	38.8	134	64.2	320	39	10
3207	VALIER	2	39.9	92.2	64	78.4	1.2	1	13.5	4.31	32.9	126	68.9	411	25	22
3208	MTLB-05	2	40.6	92.7	60	78.8	1.3	1	13.1	4.27	34.2	120	73.3	369	27	20
3209	PB1-97-2R-7090	2	49.1	97.1	*46	78.3	1.3	1	13.8	4.31	33.2	125	59.6	491	23	24
3210	WA11801-95	2	42.7	96.3	63	78.4	1.5	2	13.5	4.38	33.4	103	54.4	354	23	24
3211	WA11832-95	2	42.5	95.5	71	77.8	1.1	1	13.2	3.97	31.0	59	44.0	409	24	23
3212	BA6B95-2482	6	36.0	92.1	74	78.5	1.6	2	12.7	4.17	33.6	149	58.3	234	34	12
3213	BA2B96-5038	2	45.3	98.4	72	82.5	1.9	1	11.8	5.61	51.7	107	90.8	59	42	8
3214	BA2B96-5119	2	42.8	98.0	69	80.2	1.5	1	11.5	4.36	39.2	88	67.4	183	32	16
3215	2ND17274	2	42.7	98.5	67	79.0	1.7	1	13.6	5.44	42.4	118	76.8	277	34	12
3216	ND15422	6	37.4	92.6	73	79.6	1.5	1	12.0	4.46	37.6	159	58.9	95	47	4
3217	SK-CDC BOLD	2	44.1	90.9	73	81.2	1.6	1	12.2	5.04	42.7	107	66.5	192	51	1
3218	SK-TR346	2	40.2	94.4	67	80.5	1.4	1	11.7	4.42	38.9	107	65.8	93	46	5
3202	MOREX MALT CHECK	6	30.5	69.9	71	79.4	1.6	1	12.1	5.30	46.5	143	57.7	135	48	
Minima			34.7	82.2	56	77.5	1.1		10.6	3.30	29.6	59	39.8	23	21	
Maxima			49.1	98.5	78	82.5	2.6		13.8	5.61	51.7	176	90.8	491	51	
Means			41.1	93.1	69	79.3	1.5		12.5	4.45	37.4	123	64.3	240	35	
Standard Deviations			3.8	4.4	5	1.2	0.3		0.9	0.55	5.0	30	13.6	138	9	
Coefficients of Variation			9.3	4.8	8	1.5	22.4		7.1	12.33	13.4	24	21.2	57	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 WESTERN REGIONAL SPRING BARLEY NURSERY AND ADDITIONS - POWELL, WY

Table 6

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	Alpha-	Beta-	Quality	Overall			
			Weight	6/64"	Color	Extract	Wort	Wort	Protein							
3065	MOREX	6	32.8	74.5	67	79.1	1.6	1	14.0	5.74	43.4	152	70.6	396	37	7
3066	STANDER	6	32.3	76.3	69	79.8	1.7	1	12.8	6.03	48.9	160	80.3	310	29	12
3067	HARRINGTON	2	30.7	49.9	64	78.2	1.4	1	14.1	5.26	38.1	153	67.3	277	12	24
3068	BA6B93-2978	6	28.5	52.0	69	78.4	1.5	1	13.4	5.26	40.0	185	78.1	297	28	13
3069	WA9504-94	2	31.3	48.9	54	76.1	1.6	2	15.2	4.57	31.5	142	45.6	466	15	19
3070	MT910189	2	41.5	84.5	74	81.1	1.2	1	12.0	4.92	42.3	131	66.0	236	45	2
3071	WA11825-95	2	33.6	76.4	80	79.2	1.3	1	11.3	3.96	37.6	86	53.8	366	20	17
3072	SK-TR150	2	39.9	93.2	81	82.2	1.4	1	9.8	4.72	48.9	115	78.9	19	38	6
3073	ND15477	6	33.6	84.8	79	79.4	1.3	1	12.7	4.92	40.0	183	63.3	198	39	5
3074	PB1-95-2R-517	2	35.9	73.1	58	74.6	1.7	2	15.5	3.80	26.2	88	37.4	756	5	31
3075	PB1-95-2R-A629	2	37.3	66.5	60	75.1	1.5	2	16.5	3.87	24.8	111	40.6	584	15	19
3077	OR2967102	2	32.7	40.5	74	76.6	1.4	1	13.8	4.80	35.8	196	98.9	263	12	24
3078	BA6B94-8253	6	34.9	83.5	69	78.4	1.4	1	13.5	5.04	38.9	188	61.3	338	28	13
3079	ID93AB859	2	35.9	69.3	61	79.0	1.3	1	14.1	4.99	36.9	165	65.5	409	13	21
3080	VALIER	2	32.8	61.8	64	77.5	1.2	1	15.3	4.66	32.3	145	67.0	389	9	26
3081	MTLB-05	2	32.3	58.7	63	77.6	1.2	1	14.1	4.60	33.0	154	68.9	374	9	26
3082	PB1-97-2R-7090	2	43.3	91.0	62	79.5	1.3	1	14.2	4.80	34.8	151	64.4	316	26	15
3083	WA11801-95	2	31.5	49.3	68	76.4	1.3	1	14.5	4.82	33.7	138	66.9	359	13	21
3084	WA11832-95	2	33.9	57.7	68	77.3	1.3	1	14.0	4.54	32.9	93	51.3	438	13	21
3085	BA6B95-2482	6	33.1	85.9	79	79.4	1.6	2	13.0	4.79	37.8	180	59.5	312	34	9
3086	BA2B96-5038	2	40.3	92.1	65	81.7	1.9	1	13.0	6.29	49.5	142	82.6	145	33	11
3087	BA2B96-5119	2	37.7	87.5	67	80.8	1.3	1	12.1	4.71	40.7	121	70.2	306	41	3
3088	2ND17274	2	41.3	96.7	76	80.6	1.5	1	13.6	5.74	42.4	129	76.0	227	36	8
3089	ND15422	6	33.3	80.4	82	79.7	1.4	1	11.6	4.87	42.7	168	64.3	252	48	1
3090	SK-CDC BOLD	2	38.9	80.9	80	82.9	1.6	1	10.8	5.06	50.2	93	56.5	165	34	9
3091	SK-TR346	2	35.7	83.3	85	82.1	1.3	1	10.1	4.31	45.5	118	61.8	123	41	3
3092	MERIT	2	28.3	31.8	78	78.0	1.7	1	14.4	5.51	39.5	181	95.2	176	8	29
3093	ID90241	2	34.4	68.5	60	77.3	1.3	1	14.0	4.35	31.7	129	59.1	384	9	26
3094	ID93AB688	6	31.6	41.7	74	76.0	1.4	1	12.7	4.13	34.6	134	43.2	470	19	18
3095	GALENA	2	30.2	35.3	70	76.8	1.3	1	14.4	3.92	28.5	104	34.2	499	6	30

Table 6

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(% ASBC)	(20°DU)	amylase (ppm)	glucan		
3096	B1202	2	33.3	63.2	68	77.8	1.2	1	13.2	4.69	36.0	126	56.3	309	21	16
3076	HARRINGTON MALT CHECK	2	39.3	94.8	75	81.6	1.4	1	11.5	5.41	49.8	128	71.2	45	42	
3097	HARRINGTON MALT CHECK	2	39.8	94.5	75	81.8	1.6	1	11.8	5.50	50.0	120	76.2	102	46	
Minima			28.3	31.8	54	74.6	1.2		9.8	3.80	24.8	86	34.2	19	5	
Maxima			43.3	96.7	85	82.9	1.9		16.5	6.29	50.2	196	98.9	756	48	
Means			34.9	70.6	70	78.8	1.4		13.2	4.87	38.8	140	64.6	312	25	
Standard Deviations			3.9	18.9	8	2.2	0.2		1.5	0.61	7.0	30	14.8	153	14	
Coefficients of Variation			11.1	26.8	11	2.8	12.1		11.6	12.46	18.1	22	23.0	49	55	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by L. Bjornestad, University of Wyoming - Powell

2000 TWO ROW PRELIMINARY YIELD TRIAL - DAVIS, CA

Table 7

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
3963	20 1B 54	2	42.8	90.8	68	81.0	1.7	1	9.1	4.42	51.0	40	62.7	145	41	2
3964	22 1B 153	2	48.3	91.9	70	78.8	1.3	1	9.8	3.50	36.9	39	41.1	75	31	10
3965	23 1B 64	2	47.5	98.0	69	78.8	1.5	1	10.0	3.94	39.5	57	46.0	166	31	10
3966	23 1B 194	2	52.0	97.9	78	79.8	1.6	1	9.4	4.09	46.0	44	52.9	211	36	6
3967	25 1B 23	2	52.0	97.3	64	75.5	1.5	1	10.9	3.50	34.2	50	39.6	374	26	16
3968	28 1B 4	2	48.0	97.8	55	76.0	1.2	1	13.6	3.87	28.7	73	41.6	415	19	20
3969	8 HB 13	2	33.5	72.1	57	85.6	1.7	2	10.3	3.84	40.5	78	24.8	434	26	16
3970	8 HB 19	2	38.7	80.9	53	82.0	*3.3	2	11.4	3.91	37.3	62	22.4	428	23	19
3971	BCD 47	2	45.7	93.2	70	82.2	1.8	1	9.1	4.64	52.1	79	76.2	67	37	4
3972	OPS 60	2	40.8	93.3	71	80.2	2.3	2	9.8	3.78	42.4	58	35.8	322	31	10
3973	SALAJO 1	2	44.7	89.5	71	79.5	1.6	1	10.9	4.76	45.7	96	77.6	124	50	1
3974	SAL 14	2	44.8	88.6	71	80.1	1.7	1	10.0	4.79	49.4	79	75.4	72	32	9
3975	BU 27	2	44.2	93.5	74	81.0	1.7	1	8.5	4.52	54.6	73	68.3	56	37	4
3976	OR 2967102	2	47.2	87.3	70	80.3	1.7	1	9.8	5.01	52.9	89	79.3	134	36	6
3977	TRI/BAR 152	2	38.5	76.2	70	75.8	2.1	2	10.8	3.34	31.1	87	27.3	433	13	21
3978	TRI/4/SHY	2	42.5	74.7	69	76.0	2.3	2	11.9	4.35	39.0	90	46.6	278	26	16
3979	B/S-S//A-11	2	45.4	97.1	79	78.2	1.3	1	9.5	4.20	46.6	60	52.3	184	28	14
3980	B/S-S//A-263	2	43.7	84.5	75	79.0	2.3	2	9.8	3.89	41.3	80	46.1	92	34	8
3981	ALELI/FLARE	2	44.9	88.3	77	77.5	1.5	1	9.6	3.88	44.2	41	43.4	350	27	15
3982	CB 119	2	47.1	96.6	64	80.4	1.7	1	8.8	3.83	47.1	106	42.5	51	38	3
3983	HARRINGTON	2	38.2	89.1	81	82.5	1.5	1	8.1	4.49	60.6	62	61.7	24	29	13
3984	HARRINGTON MALT CHECK	2	40.1	95.1	75	81.7	1.8	1	11.6	6.17	56.3	139	77.0	46	38	
Minima			33.5	72.1	53	75.5	1.2		8.1	3.34	28.7	39	22.4	24	13	
Maxima			52.0	98.0	81	85.6	2.3		13.6	5.01	60.6	106	79.3	434	50	
Means			44.3	89.5	69	79.5	1.7		10.0	4.12	43.9	69	50.7	211	31	
Standard Deviations			4.6	7.9	7	2.5	0.3		1.2	0.46	8.0	20	17.5	146	8	
Coefficients of Variation			10.3	8.8	11	3.2	19.2		12.4	11.19	18.3	28	34.5	69	26	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by L. Gallagher, University of California - Davis

1999-2000 ABERDEEN SPRING AND WINTER DRILL STRIP SERIES - ABERDEEN, ID

Table 8

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
36	HARRINGTON	2	44.6	92.3	68	77.4	1.3	2	13.6	4.16	30.6	100	50.4	447	19	15
37	93AB859	2	49.9	96.8	67	78.9	2.1	2	13.7	4.73	35.1	154	62.2	354	22	13
38	90AB241	2	48.9	97.9	71	79.6	n.d.	3	13.0	4.60	36.2	143	68.0	276	32	10
39	GARNET (PITTMAN FIELD)	2	41.3	92.4	78	79.5	1.3	1	10.4	3.65	36.3	102	58.1	124	39	3
40	GARNET (PITTMAN ELEVATOR)	2	41.3	93.6	74	79.8	1.3	1	9.7	3.57	37.8	95	57.3	126	34	7
41	MOREX	6	39.5	94.1	78	76.6	1.4	1	15.1	4.74	31.8	209	54.8	259	29	12
42	92AB5180	6	41.9	91.7	70	79.1	1.6	1	11.9	4.33	38.4	140	49.5	288	46	1
43	93AB375	6	44.3	97.5	76	80.9	2.0	1	11.8	5.31	47.0	113	71.3	251	38	5
44	85AB216	2	49.3	98.1	65	79.4	1.7	2	13.6	4.63	35.3	157	54.9	84	36	6
45	94AB1269	2	50.5	98.2	61	78.8	1.6	2	13.5	4.80	36.0	126	76.5	378	34	7
46	94AB1274	2	47.2	97.3	64	79.7	1.5	2	12.9	4.61	37.5	127	72.4	244	40	2
47	95AB2299	2	42.6	97.8	67	78.6	1.6	2	14.3	5.19	37.9	155	84.7	159	21	14
48	88AB536-B	6	38.1	93.2	81	78.4	1.6	2	13.6	4.66	35.3	189	56.7	193	34	7
49	92AB1308	6	34.5	82.7	68	78.0	1.9	2	12.4	3.88	33.0	146	52.9	407	39	3
50	92AB1841	6	37.2	93.4	78	78.2	1.7	2	13.5	4.53	35.3	176	53.6	194	30	11
57	HARRINGTON MALT CHECK	2	36.4	88.8	60	79.1	2.1	2	12.3	4.70	39.7	97	59.8	445	29	
Minima			34.5	82.7	61	76.6	1.3		9.7	3.57	30.6	95	49.5	84	19	
Maxima			50.5	98.2	81	80.9	2.1		15.1	5.31	47.0	209	84.7	447	46	
Means			43.4	94.5	71	78.9	1.6		12.9	4.49	36.2	142	61.6	252	33	
Standard Deviations			5.0	4.1	6	1.1	0.3		1.4	0.50	3.7	33	10.6	109	8	
Coefficients of Variation			11.5	4.3	9	1.3	15.7		11.1	11.15	10.2	23	17.2	43	23	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

1999-2000 ABERDEEN WINTER BARLEY NURSERIES A AND B - ABERDEEN, ID

Table 9

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	Alpha-	Beta-	Overall			
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	(%)	(°ASBC)	amylase	glucan	Quality	Score
419	PIPKIN	2	39.7	97.6	56	76.1	n.d.	3	11.0	3.80	34.8	73	47.0	176	27	11
420	PUFFIN	2	47.5	99.5	60	75.0	1.4	2	13.0	4.43	34.6	98	38.9	366	31	8
422	92AB999	6	33.8	66.1	73	75.7	n.d.	3	10.6	3.78	38.0	69	39.5	532	15	16
423	92AB1308	6	34.4	89.1	66	80.9	1.9	2	10.3	4.49	46.7	99	62.9	197	29	10
424	96AB46	6	34.2	78.6	65	75.6	n.d.	3	11.3	4.40	40.8	69	46.1	573	32	7
425	88AB536-B	6	34.0	87.8	72	79.7	n.d.	3	11.7	4.55	38.8	134	49.5	234	41	5
426	88AB539-B	6	33.5	82.9	74	79.4	1.7	2	12.4	4.83	40.0	164	57.3	199	51	2
427	92AB1772	6	32.1	78.6	80	79.8	1.9	2	11.5	4.61	41.1	140	53.9	176	54	1
428	92AB1810	6	33.9	84.2	75	79.7	1.9	2	11.6	4.49	39.9	149	56.0	123	46	4
429	92AB1841	6	33.4	87.0	77	80.4	n.d.	3	11.0	5.03	46.8	130	51.3	181	51	2
430	92AB1843	6	35.1	86.7	71	78.1	n.d.	3	12.0	4.38	38.8	121	45.6	369	31	8
431	94AB1777	6	34.7	91.9	75	81.1	n.d.	3	10.0	4.55	47.2	79	39.9	441	25	12
432	96AB474	6	35.6	87.0	70	79.1	1.9	2	10.5	4.82	47.1	91	47.6	236	40	6
433	92-WB608	6	39.9	95.3	61	76.1	n.d.	3	10.6	3.16	31.5	57	32.0	861	20	14
434	KOLD	6	34.9	66.8	67	76.4	n.d.	3	12.0	3.67	31.2	77	32.6	537	15	16
435	MATHIAS	6	41.2	96.2	76	76.7	n.d.	3	11.8	3.65	31.3	94	33.0	605	20	14
436	PLAISANT	6	40.5	95.0	79	77.6	1.6	2	11.7	3.65	32.7	95	36.8	505	21	13
421	MOREX MALT CHECK	6	30.6	69.3	69	79.4	2.0	1	12.0	6.45	55.9	124	76.3	72	26	
Minima			32.1	66.1	56	75.0	1.4		10.0	3.16	31.2	57	32.0	123	15	
Maxima			47.5	99.5	80	81.1	1.9		13.0	5.03	47.2	164	62.9	861	54	
Means			36.4	86.5	70	78.1	1.7		11.3	4.25	38.9	102	45.3	371	32	
Standard Deviations			4.0	9.8	7	2.1	0.2		0.8	0.53	5.7	32	9.3	207	13	
Coefficients of Variation			11.0	11.3	10	2.6	10.5		7.1	12.38	14.6	31	20.4	56	40	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

1999-2000 ABERDEEN WINTER BARLEY NURSERY C - ABERDEEN

Table 10

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
437	85AB216	2	47.9	99.3	64	81.9	2.1	1	10.8	5.12	50.3	106	51.1	48	46	4
438	86AB1034	2	48.2	97.7	68	79.8	1.3	1	12.1	4.59	39.1	96	53.3	351	44	7
439	86AB1061	2	45.6	98.0	71	80.8	1.9	1	11.0	5.04	47.1	102	57.1	244	43	8
440	92AB827	2	49.7	99.5	63	82.0	2.0	1	10.8	5.02	47.4	80	64.3	281	42	10
441	94AB1219	2	45.5	98.7	76	80.1	1.5	1	11.3	4.84	44.3	103	58.1	377	45	5
443	94AB1269	2	49.9	99.2	65	81.7	1.8	1	11.3	5.33	50.7	99	74.4	173	42	10
444	94AB1274	2	48.5	99.3	72	82.6	2.1	1	10.5	5.23	51.6	91	73.6	100	42	10
445	94AB1347	2	42.0	98.2	72	80.2	1.4	1	11.6	4.64	41.1	127	64.2	153	51	2
446	94AB1386	2	45.6	99.5	70	78.4	1.7	2	12.4	4.66	39.9	149	73.8	382	32	17
447	95AB2262	2	47.7	98.6	69	82.0	1.7	1	13.2	5.65	45.2	118	63.0	76	45	5
448	95AB2299	2	41.1	97.2	73	78.5	1.6	2	11.5	5.04	45.1	100	77.9	219	43	8
449	95AB2314	2	51.8	99.2	74	81.4	2.4	2	12.1	5.96	51.4	88	57.1	112	41	13
450	FANFARE	2	45.8	98.6	64	78.6	1.3	2	13.0	4.36	34.1	99	42.3	100	38	14
451	TRASCO	2	49.1	99.3	64	78.5	1.6	1	13.6	5.09	38.3	143	50.3	87	34	15
452	LAMBIC	2	47.0	98.5	70	76.4	n.d.	3	12.8	3.96	32.2	122	41.5	271	32	17
453	PETULA	2	53.5	99.7	72	76.6	n.d.	3	12.9	4.00	30.8	147	40.4	211	25	19
454	RIFLE	2	46.6	99.5	72	79.6	n.d.	3	11.7	3.75	32.1	76	38.2	230	34	15
455	SPIRIT	2	46.2	99.0	75	79.2	1.8	2	11.9	4.49	39.5	111	41.0	189	49	3
456	88AB536-B	6	*33.6	*84.1	77	80.2	2.2	2	11.2	4.75	45.6	127	55.7	144	54	1
442	MOREX MALT CHECK	6	31.1	71.1	69	79.6	2.1	1	12.7	6.46	53.2	125	76.9	61	24	
Minima			41.1	97.2	63	76.4	1.3		10.5	3.75	30.8	76	38.2	48	25	
Maxima			53.5	99.7	77	82.6	2.4		13.6	5.96	51.6	149	77.9	382	54	
Means			47.3	98.8	70	79.9	1.8		11.9	4.82	42.4	110	56.7	197	41	
Standard Deviations			3.0	0.7	4	1.8	0.3		0.9	0.56	6.8	21	12.6	102	7	
Coefficients of Variation			6.4	0.7	6	2.2	18.6		7.5	11.70	16.0	20	22.3	52	18	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

1999-2000 ABERDEEN WINTER BARLEY NURSERY ORWB - ABERDEEN, ID

Table 11

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Overall		
			Weight (mg)	6/64"	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
457	88AB536	6	32.6	87.3	75	79.8	1.8	2	11.1	4.85	43.1	154	55.3	190	54	1
458	KAB 5	6	35.9	89.9	70	79.3	n.d.	3	12.6	4.27	35.7	121	39.7	399	22	26
459	KAB 9	6	33.1	71.1	60	74.8	1.4	1	14.5	4.91	33.7	126	42.9	396	21	27
460	KAB 13	6	33.8	64.0	68	76.7	1.9	2	11.8	3.91	35.0	102	39.1	634	16	29
461	KAB 18	6	30.9	79.1	69	79.5	1.4	1	11.6	4.29	38.7	120	45.0	170	35	12
462	KAB 19	6	35.0	93.9	70	79.5	1.6	1	13.3	5.31	39.5	173	58.5	120	38	9
464	KAB 37	6	35.3	89.1	64	79.0	n.d.	3	12.8	4.39	36.2	109	44.0	317	26	21
465	KAB 43	6	35.3	92.3	65	77.7	1.7	1	14.7	5.23	36.5	146	58.2	161	33	15
466	KAB 47	6	31.3	86.2	58	79.0	1.5	2	13.4	4.74	37.0	117	55.8	224	36	11
467	KAB 50	6	37.4	94.5	68	79.8	2.2	2	12.4	4.89	40.9	111	54.6	339	47	2
468	KAB 51	6	38.3	96.4	67	77.4	2.2	2	12.6	4.69	38.6	129	52.8	165	33	15
469	KAB 61	6	33.1	89.8	62	77.5	1.6	1	13.2	5.09	38.9	123	54.0	266	34	14
470	KAB 65	6	39.6	96.6	69	80.5	2.4	2	11.5	4.55	40.7	125	45.4	282	46	3
471	KAB 68	6	35.4	85.9	75	79.4	1.8	2	12.0	4.22	36.5	121	44.1	522	32	17
472	STAB 7	6	33.4	87.8	69	78.8	1.9	2	13.8	4.98	37.4	158	55.1	264	41	7
473	STAB 11	6	40.0	94.6	65	78.3	1.9	2	12.2	4.25	36.3	64	45.3	222	35	12
474	STAB 13	6	36.9	84.4	69	78.2	2.6	2	12.1	3.77	32.1	92	38.1	730	25	23
475	STAB 33	6	42.0	96.1	58	78.4	2.7	2	12.1	4.07	35.1	121	39.7	294	28	19
476	STAB 34	6	35.2	84.6	65	79.4	3.3	2	12.0	4.59	40.0	112	50.3	319	40	8
477	STAB 35	6	30.9	60.2	78	79.5	3.1	2	11.4	4.33	39.8	109	43.8	319	26	21
478	STAB 46	6	32.7	56.5	55	77.4	2.8	2	11.0	3.22	31.5	80	33.3	540	16	29
479	STAB 47	6	35.6	90.2	67	76.8	2.0	2	13.2	4.62	36.8	120	50.6	133	37	10
480	STAB 54	6	37.3	86.0	69	78.4	n.d.	3	11.0	3.73	36.2	69	38.1	480	24	24
481	STAB 64	6	36.8	88.9	65	77.7	n.d.	3	11.3	3.59	33.9	100	33.7	333	20	28
482	STAB 88	6	39.1	96.5	69	77.6	2.5	2	12.2	4.10	35.4	116	42.8	292	28	19
484	STAB 110	6	35.6	94.9	55	77.3	2.2	2	12.0	3.70	31.2	97	36.3	299	24	24
485	STAB 113	6	34.8	89.5	64	80.1	2.4	2	11.1	4.16	39.9	95	42.3	105	42	5
486	STAB 120	6	31.1	81.6	75	79.5	2.4	1	12.7	5.00	40.0	82	56.6	202	42	5
487	STAB 155	6	32.4	83.2	65	80.5	2.2	2	12.1	3.81	35.1	51	38.3	399	31	18
488	STAB 171	6	34.3	93.1	61	80.1	n.d.	3	13.9	5.55	43.6	95	51.9	54	43	4

Table 11

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	
463	MOREX MALT CHECK	6	30.6	71.1	71	79.1	1.7	1	12.2	5.81	49.4	139	64.5	84	40
483	MOREX MALT CHECK	6	31.6	74.8	72	78.4	1.6	1	12.3	5.47	45.3	146	63.6	68	41
Minima			30.9	56.5	55	74.8	1.4		11.0	3.22	31.2	51	33.3	54	16
Maxima			42.0	96.6	78	80.5	3.3		14.7	5.55	43.6	173	58.5	730	54
Means			35.2	86.1	66	78.6	2.1		12.4	4.43	37.2	111	46.2	306	33
Standard Deviations			2.8	10.5	6	1.3	0.5		1.0	0.57	3.1	27	7.7	157	10
Coefficients of Variation			8.1	12.2	9	1.7	24.0		8.2	12.81	8.4	24	16.6	51	29

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 ABERDEEN BARLEY NURSERY A - ABERDEEN, ID

Table 12

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank
1218	BANCROFT	2	46.8	94.8	63	79.0	1.3	1	14.4	5.10	36.4	145	52.7	468	23	35
1219	B1202	2	46.0	96.5	61	78.3	1.4	1	14.4	5.10	36.6	110	56.0	325	23	35
1220	2B96-5038	2	49.1	98.2	68	81.8	2.0	1	12.2	6.44	*53.8	124	91.9	81	46	3
1221	2B96-5119	2	47.8	97.7	64	77.8	1.6	1	14.6	5.34	37.4	114	70.0	433	22	39
1222	CHINOOK	2	47.3	96.7	67	78.3	1.3	1	14.7	5.29	37.3	156	56.7	538	19	43
1223	COOPER	2	41.9	91.1	53	79.4	1.6	1	13.4	4.66	35.9	76	45.6	288	40	9
1224	CREST	2	44.8	96.5	54	78.5	1.6	1	14.6	5.77	41.4	112	69.7	372	31	17
1226	CRYSTAL II	2	48.3	97.3	68	79.1	1.6	1	14.1	5.42	39.4	138	65.1	499	23	35
1227	GALENA	2	43.0	95.3	59	78.9	1.4	2	12.6	4.38	35.1	99	39.0	461	28	24
1228	GARNET	2	49.6	98.5	73	81.0	1.5	1	13.5	5.52	41.9	139	65.1	328	31	17
1229	HARRINGTON	2	41.6	*85.6	58	77.1	1.2	2	14.2	4.29	31.5	77	41.0	549	15	44
1230	CDC KENDALL	2	44.5	96.8	62	79.3	1.5	1	14.9	5.85	41.1	160	70.8	180	27	26
1231	LOGAN (ND11231-11)	2	50.3	97.4	66	77.2	1.0	1	14.4	4.63	31.7	156	42.2	564	26	30
1232	MERIT (2B-4947)	2	44.3	94.5	56	80.0	1.7	1	14.0	5.61	42.3	140	75.6	250	34	14
1233	AC METCALFE (TR232)	2	42.3	94.8	68	78.9	1.6	1	15.0	5.89	40.1	153	80.5	153	27	26
1234	MORAVIAN 14	2	40.3	96.5	60	78.0	n.d.	3	13.9	4.47	33.3	109	40.1	348	27	26
1235	ORCA	2	55.9	98.4	53	77.9	2.0	1	14.7	6.07	42.3	140	68.7	173	24	33
1236	TRIUMPH	2	43.4	94.9	55	78.6	n.d.	3	13.4	4.45	34.1	85	35.4	373	30	20
1237	XENA	2	48.3	98.4	65	78.0	1.2	2	12.9	4.11	32.3	85	43.9	521	27	26
1238	MT910189	2	49.4	95.0	59	79.9	1.4	1	13.5	5.21	39.8	129	59.9	393	34	14
1239	C22	2	46.5	97.9	59	78.9	1.4	2	13.6	4.34	33.7	86	42.4	325	22	39
1240	C32	2	47.7	98.0	58	78.9	1.3	2	12.7	3.75	29.2	84	36.1	438	24	33
1241	C37	2	47.1	99.0	61	80.1	1.6	2	12.5	4.73	38.7	110	44.4	315	44	6
1242	C40	2	45.8	98.2	64	79.2	1.5	1	13.4	5.33	41.3	118	54.8	149	47	2
1243	C43	2	49.4	99.1	60	79.2	2.0	2	14.1	5.52	41.3	99	52.0	366	31	17
1244	C46	2	42.3	97.3	59	80.7	1.3	1	12.7	4.95	40.7	110	54.4	300	50	1
1245	85AB2323	2	49.2	94.1	59	78.1	1.5	1	14.6	5.25	37.1	120	51.5	423	30	20
1247	90AB241	2	48.6	98.0	67	80.5	1.5	1	13.2	5.35	40.8	108	68.3	382	36	12
1248	91AB3203	2	50.2	97.9	73	76.8	1.1	1	14.0	4.24	30.9	97	38.4	578	20	42
1249	93AB835	2	50.9	98.7	72	80.9	1.6	1	13.1	5.88	45.6	119	81.0	111	46	3

Table 12

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
1250	93AB859	2	50.4	98.9	69	79.9	1.6	2	14.1	5.49	40.7	150	67.1	396	26	30
1251	94GH86-5	2	47.1	97.2	64	78.9	1.2	1	14.2	5.49	38.3	147	66.6	225	22	39
1252	95AB11469	2	54.3	98.7	69	78.0	1.3	1	13.5	4.51	34.2	137	43.8	503	34	14
1253	95M4623	2	49.6	97.5	62	79.0	1.2	1	13.3	4.74	36.6	125	46.5	391	42	7
1254	95SR7A	2	46.7	93.4	57	77.6	n.d.	3	12.9	4.19	31.9	115	36.3	504	26	30
1255	95SR149C	2	45.5	95.3	66	79.5	1.3	1	12.9	4.81	38.5	112	51.8	229	45	5
1256	95SR316A	2	47.6	96.0	65	79.3	1.4	1	13.8	5.00	35.4	121	66.7	343	30	20
1257	96AB8453	2	44.0	95.3	56	78.1	1.3	1	13.4	4.40	33.5	103	42.3	453	39	10
1258	97AB7952	2	48.1	99.0	68	79.4	1.3	1	13.3	5.08	37.8	113	65.1	368	35	13
1259	97AB7973	2	49.5	98.6	66	79.3	1.4	1	13.3	4.98	38.8	116	52.5	236	42	7
1260	97AB9367	2	50.2	96.8	69	79.2	1.3	1	13.9	5.01	37.6	176	66.6	552	23	35
1261	98AB11865	2	44.9	95.4	69	78.2	1.7	2	13.0	4.07	33.1	100	36.2	498	28	24
1262	98AB11993	2	46.2	98.7	60	80.3	1.3	1	13.2	4.86	38.5	109	64.0	237	38	11
1263	98AB12044	2	49.2	98.6	65	79.9	1.3	1	14.0	5.24	38.7	116	64.0	347	29	23
1225	HARRINGTON MALT CHECK	2	39.0	94.8	74	81.2	1.5	1	11.6	5.56	50.9	126	73.6	88	46	
1246	HARRINGTON MALT CHECK	2	39.4	95.7	77	81.1	1.4	1	11.9	5.59	49.7	111	72.6	97	46	
Minima			40.3	91.1	53	76.8	1.0		12.2	3.75	29.2	76	35.4	81	15	
Maxima			55.9	99.1	73	81.8	2.0		15.0	6.44	45.6	176	91.9	578	50	
Means			47.2	96.9	63	79.0	1.4		13.7	5.02	37.3	119	56.0	363	31	
Standard Deviations			3.3	1.8	5	1.1	0.2		0.7	0.60	3.7	24	14.2	131	9	
Coefficients of Variation			6.9	1.9	9	1.4	16.1		5.2	12.02	10.0	20	25.3	36	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 PERFORMANCE OF WINTER MALTING BARLEY LINES IN MARYLAND - MD

Table 13

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort			Alpha-	Beta-	Overall			
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)	amylase (ppm)	glucan Score		
1264	92AB1340	6	18.6	6.2	31	73.4	2.3	2	12.8	5.69	46.9	137	71.4	158	16	1
1265	94AB1347	2	19.8	19.2	33	73.7	n.d.	3	14.7	6.87	48.2	149	54.8	154	7	3
1266	95AB2260	2	23.1	68.1	29	74.1	n.d.	3	14.5	8.18	57.6	78	59.5	47	3	4
1267	95AB2262	2	25.3	76.1	30	75.8	4.0	2	14.5	6.19	43.3	92	47.4	212	16	1
1270	HARRINGTON MALT CHECK	2	40.0	95.9	74	80.9	1.4	1	11.6	5.23	48.8	125	70.8	75	39	
Minima			18.6	6.2	29	73.4	2.3		12.8	5.69	43.3	78	47.4	47	3	
Maxima			25.3	76.1	33	75.8	4.0		14.7	8.18	57.6	149	71.4	212	16	
Means			21.7	42.4	31	74.2	3.2		14.1	6.73	49.0	114	58.3	143	11	
Standard Deviations			3.1	34.9	2	1.1	1.2		0.9	1.08	6.1	34	10.1	69	7	
Coefficients of Variation			14.2	82.2	6	1.4	37.5		6.3	16.09	12.5	30	17.3	48	62	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg and R. Kratochvil - USDA/ARS - Aberdeen and University of Maryland - College Park

2000 ABERDEEN BARLEY NURSERY H - ABERDEEN, ID

Table 14

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Rank	
			(mg)	(%)	(Agtron)	(%)	Color	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
1591	ACUARIO	2	48.5	97.5	57	78.4	n.d.	3	12.6	3.97	32.8	90	43.3	505	26	19
1592	ALEXIS	2	44.2	94.9	57	79.2	1.3	1	12.3	3.92	32.9	93	39.6	260	33	9
1593	B1202	2	45.1	95.3	59	78.5	1.2	1	13.9	4.88	36.3	117	55.6	367	30	12
1594	CRYSTAL II	2	47.6	95.8	72	79.1	1.5	1	14.2	5.28	38.0	148	60.9	453	19	31
1595	GARNET	2	46.1	96.3	67	79.7	1.4	1	13.8	5.02	38.1	144	59.6	360	26	19
1596	HARRINGTON	2	39.6	81.8	60	77.2	1.2	1	14.6	4.26	30.0	100	45.1	569	15	35
1597	MERIT	2	41.9	88.9	61	80.2	1.5	1	13.0	5.02	41.1	143	71.6	295	36	6
1598	CDC STRATUS	2	45.2	94.5	62	79.5	1.3	1	13.7	5.23	38.2	155	67.4	260	25	24
1599	BCD 47	2	47.9	93.4	58	78.9	1.3	2	14.0	5.37	40.3	174	77.2	252	26	19
1600	HE 6890	2	46.6	95.3	48	78.5	1.3	2	13.2	4.48	35.2	104	44.6	416	38	3
1601	HE 96529	2	44.6	94.7	51	76.5	1.3	1	14.7	4.58	31.4	125	45.2	506	33	9
1602	MT886610	2	44.0	90.2	60	78.5	1.4	1	14.8	5.58	39.6	130	62.0	558	26	19
1603	92AB3159	2	41.5	90.1	65	76.8	1.2	1	14.6	4.39	30.0	126	50.1	457	22	30
1604	95AB18478	2	48.4	98.0	66	79.0	1.3	1	14.4	5.06	35.1	132	56.3	541	27	18
1605	96AB10328	2	46.8	96.6	64	79.0	1.3	1	13.4	5.00	38.1	126	54.0	543	39	1
1606	97AB6361	2	46.2	92.8	63	80.1	1.3	1	13.4	5.22	39.2	110	45.1	452	38	3
1607	97AB6643	2	49.8	94.8	61	80.6	1.4	1	13.3	5.41	41.3	125	60.3	314	39	1
1608	97AB8021	2	45.6	95.4	62	79.2	1.3	1	13.8	5.06	38.6	147	71.2	387	23	27
1609	97AB9196	2	44.9	95.6	60	77.7	1.1	1	13.1	3.84	29.6	86	47.5	499	24	25
1610	98AB11402	2	47.8	95.4	63	80.4	1.5	1	13.2	5.04	37.4	142	50.9	273	38	3
1611	98AB11430	2	47.0	97.0	63	80.1	1.5	1	13.5	5.14	40.0	129	62.1	311	34	8
1612	98AB11456	2	45.1	94.1	57	79.3	1.5	1	14.3	5.18	37.4	152	58.9	492	19	31
1613	98AB11478	2	44.0	90.0	61	78.6	1.4	1	14.2	4.85	34.4	132	63.5	237	30	12
1615	98AB11482	2	42.9	88.5	61	78.3	1.6	1	14.0	5.08	37.0	124	64.4	420	28	14
1616	98AB11538	2	43.3	85.5	56	75.6	1.5	2	13.5	3.47	25.3	80	37.6	665	13	39
1617	98AB11568	2	46.5	97.3	63	76.8	2.0	2	14.0	4.02	29.0	87	43.5	533	18	34
1618	98AB11695	2	45.9	94.9	60	78.5	1.3	1	13.3	3.95	30.9	99	42.4	409	32	11
1619	98AB11720	2	46.7	93.6	66	77.4	1.9	2	12.9	3.84	30.4	99	38.4	517	24	25
1620	98AB11761	2	44.6	91.5	58	78.6	1.7	1	13.3	4.90	39.1	90	64.3	379	28	14
1621	98AB11771	2	47.1	92.1	60	77.0	1.3	2	13.8	4.18	31.2	106	39.8	614	19	31

Table 14

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	(%)	(°ASBC)	(20°DU)	amylase	glucan	
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(ppm)			Score	Rank
1622	98AB11789	2	48.1	97.6	64	79.7	2.0	2	12.7	5.28	43.1	70	54.5	470	35	7
1623	98AB11894	2	42.8	82.6	59	78.3	1.4	2	13.5	4.13	31.4	90	39.8	599	14	37
1624	98AB11938	2	45.1	92.8	64	77.7	1.2	1	13.2	3.97	30.8	107	47.4	392	28	14
1625	98AB11940	2	43.8	89.8	58	77.1	1.2	1	12.9	3.96	30.5	107	45.2	455	26	19
1626	98AB11959	2	48.6	99.0	69	79.3	1.5	1	13.1	4.92	38.5	71	61.1	372	28	14
1627	98AB12019	2	43.9	95.8	53	76.2	1.1	1	13.9	3.70	26.7	105	43.3	710	23	27
1628	98AB12072	2	44.4	90.1	67	78.4	1.2	1	15.2	4.80	32.7	142	58.5	713	23	27
1629	98AB12194	2	43.1	84.6	65	77.5	1.3	1	13.9	4.35	31.2	145	43.1	437	14	37
1630	98AB12210	2	38.6	82.2	60	77.9	1.3	1	13.7	4.27	31.2	100	44.7	478	15	35
1614	HARRINGTON MALT CHECK	2	39.9	95.3	75	81.3	1.4	1	11.9	5.35	48.4	120	74.0	90	46	
Minima			38.6	81.8	48	75.6	1.1		12.3	3.47	25.3	70	37.6	237	13	
Maxima			49.8	99.0	72	80.6	2.0		15.2	5.58	43.1	174	77.2	713	39	
Means			45.2	92.7	61	78.4	1.4		13.7	4.63	34.7	117	52.8	448	27	
Standard Deviations			2.4	4.5	5	1.2	0.2		0.6	0.58	4.5	25	10.6	124	8	
Coefficients of Variation			5.4	4.9	8	1.6	15.2		4.7	12.47	13.0	22	20.0	28	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 TETONIA BARLEY NURSERY A - TETONIA, ID

Table 15

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein			(°ASBC)	(20°DU)	amylase	glucan	
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)	(°F)	(ppm)			
1631	BANCROFT	2	36.2	63.5	81	75.6	1.1	1	16.2	4.68	29.1	201	49.0	492	16	9
1632	B1202	2	35.2	69.4	79	75.2	1.1	1	16.1	4.54	29.6	146	53.5	398	13	16
1633	2B96-5038	2	37.1	85.0	79	77.9	1.6	1	16.1	*6.40	39.5	213	81.0	135	12	20
1634	2B96-5119	2	36.9	82.8	78	75.2	1.3	1	16.2	4.88	30.5	177	61.4	408	9	27
1635	CHINOOK	2	39.4	82.7	82	77.8	1.1	1	13.6	4.85	35.7	182	58.7	505	11	24
1636	COOPER	2	32.4	51.0	73	74.0	1.2	1	15.8	4.00	25.5	107	42.2	462	13	16
1637	CREST	2	36.2	81.4	75	77.0	1.3	1	14.8	4.94	34.0	149	62.3	373	9	27
1639	CRYSTAL II	2	37.2	65.4	86	75.3	1.2	1	16.6	4.92	29.3	195	59.9	449	9	27
1640	GALENA	2	33.9	62.5	76	73.2	1.3	2	16.6	4.27	25.5	142	43.9	421	8	33
1641	GARNET	2	36.7	86.3	88	76.6	1.2	1	15.2	4.98	32.2	192	57.2	280	15	11
1642	HARRINGTON	2	32.9	57.8	75	75.7	1.1	1	13.6	3.89	28.5	109	46.2	489	13	16
1643	CDC KENDALL	2	37.1	92.4	78	77.7	1.3	1	14.6	5.21	36.2	213	61.4	141	17	7
1644	LOGAN (ND11231-11)	2	43.5	94.0	76	76.9	0.9	1	13.7	3.91	29.1	140	44.9	704	19	4
1645	MERIT (2B-4947)	2	34.8	78.4	83	78.1	1.3	1	14.3	4.91	35.1	189	64.3	241	16	9
1646	AC METCALFE (TR232)	2	33.1	67.6	83	76.0	1.4	1	15.7	5.27	33.9	188	62.7	157	8	33
1647	MORAVIAN 14	2	32.8	78.4	72	75.7	*2.2	2	15.5	4.18	28.3	140	45.6	546	8	33
1648	ORCA	2	*47.8	96.7	*64	77.0	1.5	1	15.3	5.61	36.6	198	61.9	150	18	5
1649	TRIUMPH	2	34.3	74.3	75	76.6	1.8	2	14.7	4.11	28.3	114	44.9	374	15	11
1650	XENA	2	38.2	83.0	81	75.8	1.3	1	13.6	3.51	27.3	100	46.1	475	15	11
1651	MT910189	2	40.1	85.0	87	78.9	1.2	1	12.6	4.51	35.8	160	60.9	442	25	1
1652	C22	2	36.1	78.3	85	74.7	1.5	2	14.9	3.94	27.1	121	37.9	388	12	20
1653	C32	2	36.3	71.3	84	75.0	1.8	2	14.2	3.38	23.8	103	27.2	880	5	39
1654	C37	2	36.8	88.5	78	76.7	*2.3	2	13.8	4.06	31.0	137	38.5	318	12	20
1655	C40	2	36.7	91.7	79	78.6	1.2	1	14.4	4.95	36.2	145	50.8	169	25	1
1656	C43	2	37.1	73.8	79	76.6	*2.2	2	15.2	5.10	34.5	155	50.8	334	8	33
1657	C46	2	32.0	75.3	86	75.9	1.2	1	16.2	4.89	30.9	198	60.7	374	9	27
1658	85BA2323	2	39.6	81.3	85	77.0	1.3	1	15.7	4.85	32.7	197	48.6	463	18	5
1659	90AB241	2	35.4	86.5	80	77.7	1.3	1	14.2	4.86	35.5	219	65.7	271	15	11
1660	91AB3203	2	40.0	84.8	87	75.3	1.0	1	13.9	3.65	27.9	128	33.8	757	13	16
1661	93AB835	2	38.5	88.3	86	77.1	1.2	1	14.8	5.14	35.2	193	74.7	108	17	7

Table 15

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)	Score	Rank	
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)					
1663	93AB859	2	37.8	83.6	77	77.1	1.5	2	14.1	4.33	31.2	181	57.1	416	1	44
1664	94GH86-5	2	35.2	72.6	77	74.6	1.1	1	15.9	4.61	29.3	193	55.6	327	9	27
1665	95AB11469	2	42.4	86.5	80	75.2	1.0	1	14.2	3.57	26.9	155	33.7	702	10	26
1666	95M4623	2	38.6	85.9	85	76.4	1.0	1	14.0	4.05	29.8	158	38.9	495	11	24
1667	95SR7A	2	35.9	58.2	90	74.3	1.0	2	15.2	4.08	27.6	182	35.2	496	5	39
1668	95SR149C	2	32.3	59.6	85	74.8	1.2	1	14.9	3.71	25.5	165	47.7	362	9	27
1669	95SR316A	2	36.7	73.7	87	77.8	1.1	1	12.8	4.34	35.2	144	84.7	324	7	37
1670	96AB8453	2	33.0	62.9	86	76.2	1.2	2	13.9	4.07	30.1	128	39.3	309	12	20
1671	97AB7952	2	37.5	92.4	79	77.0	1.4	1	13.6	4.02	30.5	145	66.3	521	7	37
1672	97AB7973	2	38.8	86.9	80	75.4	1.2	2	15.0	4.56	30.1	163	45.2	233	23	3
1673	97AB9367	2	39.7	82.3	81	76.7	1.5	1	15.1	4.32	29.0	216	62.6	376	4	42
1674	98AB11865	2	36.2	72.2	84	75.0	1.1	2	14.2	4.59	32.1	114	32.1	561	15	11
1675	98AB11993	2	35.2	78.2	76	75.5	1.6	1	15.5	3.68	25.1	166	60.9	700	2	43
1676	98AB12044	2	36.6	80.8	82	75.9	1.1	1	15.1	4.35	29.0	156	57.3	226	5	39
1638	HARRINGTON MALT CHECK	2	39.6	94.6	74	81.5	1.5	1	11.5	5.34	48.7	114	64.3	141	46	
1662	HARRINGTON MALT CHECK	2	40.0	94.9	74	82.0	1.5	1	11.7	5.36	48.7	120	74.7	203	42	
Minima			32.0	51.0	72	73.2	0.9		12.6	3.38	23.8	100	27.2	108	1	
Maxima			43.5	96.7	90	78.9	1.84		16.6	5.61	39.5	219	84.7	880	25	
Means			36.6	78.0	81	76.2	1.3		14.8	4.42	30.8	162	52.6	403	12	
Standard Deviations			2.6	10.9	4	1.3	0.2		1.0	0.54	3.7	34	12.9	174	6	
Coefficients of Variation			7.1	14.0	6	1.7	16.3		6.8	12.27	12.1	21	24.5	43	47	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

1999-2000 TETONIA SPRING DRILL STRIP SERIES - TETONIA, ID

Table 16

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
1677	HARRINGTON (TETONIA)	2	34.3	64.9	77	76.3	1.1	1	14.5	4.46	31.9	114	40.9	440	23	2
1678	93AB859	2	37.8	87.3	82	77.8	1.4	2	13.7	4.03	31.3	147	55.2	634	4	6
1679	90AB241	2	38.0	87.8	79	78.1	1.7	1	14.1	4.24	30.0	158	55.3	534	11	5
1680	MOREX	6	32.9	50.2	82	77.8	1.1	1	12.3	4.49	37.3	179	45.6	474	24	1
1681	92AB5180	6	31.6	61.9	79	77.6	1.6	2	13.6	4.55	35.0	180	46.1	323	17	4
1682	HARRINGTON (ABERDEEN)	2	42.8	90.8	68	78.6	1.8	2	13.6	4.20	30.1	84	39.3	742	19	3
1662	HARRINGTON MALT CHECK	2	40.0	94.9	74	82.0	1.5	1	11.7	5.36	48.7	120	74.7	203	42	
Minima			31.6	50.2	68	76.3	1.1		12.3	4.03	30.0	84	39.3	323	4	
Maxima			42.8	90.8	82	78.6	1.8		14.5	4.55	37.3	180	55.3	742	24	
Means			36.2	73.8	78	77.7	1.4		13.6	4.33	32.6	144	47.1	524	16	
Standard Deviations			4.1	17.0	5	0.8	0.3		0.7	0.20	2.9	38	6.9	148	8	
Coefficients of Variation			11.4	23.0	7	1.0	18.8		5.4	4.69	9.0	26	14.6	28	47	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 TETONIA BARLEY NURSERY B - TETONIA, ID

Table 17

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
1935	BA6B93-2978	6	30.0	67.0	77	77.3	1.2	1	14.6	4.96	35.0	216	69.1	116	20	5
1937	MT910189	2	36.6	76.0	81	77.6	1.0	1	15.1	4.75	31.6	218	75.9	330	9	25
1938	WA9504-94	2	30.7	53.6	64	74.0	n.d.	3	18.1	4.62	26.4	187	40.2	594	14	13
1939	2ND16453	2	40.0	96.7	67	75.5	1.8	2	16.4	5.63	34.9	179	58.3	319	11	23
1940	2ND16161	2	40.1	93.5	74	76.7	1.0	1	14.3	4.05	29.4	121	54.1	708	22	4
1941	BA6B94-8253	6	32.5	72.7	74	76.1	1.7	1	16.0	5.41	34.4	229	60.6	201	16	7
1942	95AB11469	2	40.8	92.4	75	75.7	1.1	1	15.1	3.74	25.8	151	39.1	579	15	9
1943	95AB13058	6	29.8	63.0	79	78.2	1.1	1	*12.5	3.99	33.7	142	44.9	300	27	2
1944	VALIER (MTLB-30)	2	32.7	66.9	74	76.0	1.1	1	15.5	4.51	29.3	172	66.1	361	9	25
1945	MTLB-05	2	33.6	70.5	70	76.1	1.1	1	16.0	4.59	28.7	201	68.7	407	9	25
1946	BA6B95-2482	6	30.1	66.0	80	76.4	1.4	2	15.0	4.41	30.4	213	56.0	148	16	7
1947	BA2B96-5038	2	36.5	89.6	78	78.9	1.4	1	14.9	5.76	40.5	194	97.1	88	24	3
1948	BA2B96-5119	2	34.8	85.1	75	76.6	1.2	1	15.4	4.57	29.9	178	73.8	249	15	9
1949	2ND17275	2	37.5	93.4	75	76.7	1.2	1	15.9	5.22	33.9	196	77.1	388	10	24
1950	SK-CDC BOLD	2	36.1	67.8	79	77.9	1.2	1	15.5	4.81	32.0	153	64.8	294	12	19
1951	SK-TR346	2	33.1	75.4	76	75.6	1.1	1	15.8	4.52	28.5	177	63.3	301	9	25
1952	BANCROFT	2	35.8	80.9	77	76.5	1.1	1	15.3	4.48	30.0	182	52.4	438	13	16
1953	CHINOOK	2	34.1	62.6	78	75.8	1.0	1	15.6	4.71	30.2	210	61.7	512	9	25
1954	CREST	2	35.0	83.4	70	75.6	1.4	1	16.3	5.05	32.2	210	75.9	292	12	19
1955	CRYSTAL II	2	35.6	71.7	75	75.6	1.3	1	16.5	4.86	29.5	188	71.8	373	9	25
1957	HARRINGTON	2	31.5	57.7	70	74.6	1.2	1	15.9	4.11	26.6	136	47.9	496	13	16
1958	CDC KENDALL	2	32.6	83.2	73	76.3	1.3	1	16.2	5.21	32.3	240	75.8	147	12	19
1959	MERIT	2	33.9	73.9	72	76.8	1.3	1	15.6	4.95	33.8	216	88.4	212	12	19
1960	85AB2323	2	38.0	83.8	80	78.1	1.3	1	15.2	4.96	32.8	176	57.9	310	13	16
1961	90AB241	2	33.7	87.7	73	76.6	1.3	1	15.3	4.71	31.7	193	77.6	222	15	9
1962	93AB859	2	36.6	85.7	72	77.0	1.7	2	15.2	4.98	33.4	195	68.1	228	14	13
1963	94AB12271	2	38.3	81.5	73	75.5	1.2	1	15.6	3.89	25.3	133	42.6	409	15	9
1964	94AB12990	2	39.1	87.0	75	76.5	1.2	1	15.5	4.80	31.2	190	58.4	380	14	13
1965	95M4623	2	37.8	89.1	76	74.9	1.0	1	15.4	4.40	28.7	169	45.3	461	19	6
1966	MT886610	2	34.9	69.8	79	75.3	1.1	1	15.6	4.37	28.7	175	56.8	545	2	31

Table 17

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-						
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)	amylase (ppm)	glucan Score	Quality	Overall Rank
1967	85AB2323 (OZBURN)	2	39.9	86.2	79	79.1	1.5	1	13.4	4.90	38.5	147	51.6	184	30	1
1936	HARRINGTON MALT CHECK	2	40.2	94.5	76	81.5	1.5	1	12.0	5.53	49.9	133	73.4	96	45	
1956	HARRINGTON MALT CHECK	2	40.3	94.7	73	81.5	1.5	1	11.4	5.45	51.2	133	74.6	82	45	
Minima			29.8	53.6	64	74.0	1.0		13.4	3.74	25.3	121	39.1	88	2	
Maxima			40.8	96.7	81	79.1	1.8		18.1	5.76	40.5	240	97.1	708	30	
Means			35.2	77.9	75	76.4	1.2		15.5	4.71	31.3	183	62.6	342	14	
Standard Deviations			3.2	11.5	4	1.2	0.2		0.8	0.47	3.5	29	14.0	151	6	
Coefficients of Variation			9.0	14.7	5	1.5	16.6		5.2	10.09	11.0	16	22.3	44	41	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 TETONIA BARLEY NURSERY C - TETONIA, ID

Table 18

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Overall		
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
1968	BANCROFT	2	33.8	71.2	80	75.5	1.2	1	15.2	4.45	29.7	176	49.5	460	16	14
1969	B1202	2	33.3	69.2	75	75.4	1.3	1	16.3	4.53	28.0	147	56.4	281	12	23
1970	COOPER	2	30.4	49.8	73	73.8	1.2	1	16.0	3.89	24.4	111	41.7	435	16	14
1971	CRYSTAL II	2	34.8	60.6	80	75.1	1.4	1	16.7	4.96	30.0	211	70.8	379	9	38
1972	GALENA	2	32.9	65.5	66	74.5	1.3	1	16.5	4.40	27.4	144	46.9	311	16	14
1973	HARRINGTON	2	35.1	69.0	72	74.6	1.3	1	16.4	4.72	29.5	143	63.8	440	9	38
1974	JERSERY (CEB 9538)	2	32.2	79.4	63	75.2	1.3	1	16.0	4.26	27.7	148	54.9	251	9	38
1975	CDC KENDALL	2	33.9	84.3	74	76.5	1.3	1	16.2	5.08	32.3	228	75.8	138	16	14
1977	MANLEY	2	34.0	71.5	76	75.0	1.2	1	16.7	4.94	29.4	239	80.4	385	9	38
1978	MERIT	2	33.4	86.5	78	76.5	1.2	1	15.6	4.87	32.0	204	81.9	326	12	23
1979	MORAVIAN 14	2	29.7	70.0	64	75.2	*2.5	2	15.9	4.55	28.8	156	46.6	198	18	11
1980	ORCA	2	40.8	89.0	60	74.2	1.9	1	16.7	5.46	33.5	224	89.2	136	19	10
1981	PITCHER	2	28.6	53.1	65	74.8	1.4	2	15.9	4.32	27.9	173	46.4	180	11	34
1982	C 22	2	32.3	67.3	72	74.2	1.4	2	16.0	4.31	26.8	131	46.0	241	15	19
1983	C 32	2	33.5	62.9	75	74.0	1.3	2	16.1	3.58	22.8	113	35.2	653	12	23
1984	C 37	2	34.0	80.2	68	75.4	n.d.	3	16.1	4.37	27.8	162	48.6	209	10	36
1985	C 40	2	32.3	81.3	70	75.4	1.8	1	15.8	5.46	34.7	175	56.6	97	12	23
1986	C 43	2	34.8	76.4	66	75.2	n.d.	3	17.0	5.46	32.9	179	64.3	211	6	45
1987	C 46	2	31.6	82.6	80	76.7	1.4	1	15.5	4.86	31.6	180	69.9	300	12	23
1988	C 52	2	31.2	66.3	74	74.6	1.2	1	16.7	4.51	27.0	139	51.9	138	24	5
1989	PB1-95-2R-522	2	36.8	68.6	73	74.4	1.2	1	14.7	3.67	25.7	95	38.2	727	10	36
1990	PB1-95-2R-546	2	34.0	79.5	76	75.4	1.2	1	15.0	3.83	26.6	130	37.3	648	13	22
1991	95SR7A	2	34.6	69.2	87	74.7	1.2	1	15.0	3.51	24.0	153	37.9	436	6	45
1992	95SR149C	2	33.5	78.3	75	75.0	1.1	1	15.8	4.41	28.2	174	59.6	439	9	38
1993	95SR316A	2	35.3	68.9	85	78.1	1.2	1	15.7	4.60	29.7	177	77.7	281	16	14
1994	95M4623	2	37.3	89.4	78	76.2	1.1	1	15.1	4.35	29.7	161	49.6	362	12	23
1995	96M5611	2	41.4	96.3	71	75.7	1.0	1	16.0	4.10	26.1	146	42.7	707	18	11
1996	94-GH86-5	2	33.4	69.6	73	75.9	1.2	1	16.2	4.73	31.0	179	67.1	259	12	23
1998	85AB2323	2	38.5	81.8	80	77.5	1.2	1	15.5	4.96	32.2	191	63.0	306	11	34
1999	95AB18478	2	35.9	86.7	76	75.6	1.2	1	16.3	4.40	27.3	177	59.8	372	12	23

Table 18

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-		Beta-	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score	Rank
2000	96AB8289	2	38.4	81.4	79	74.5	1.1	1	16.0	3.70	24.0	139	38.6	629	12	23
2001	96AB9904	2	34.5	53.8	67	72.6	1.5	2	16.8	3.82	22.6	114	37.9	733	12	23
2002	97AB6696	2	40.8	91.4	68	74.1	1.1	1	17.0	4.13	24.5	129	38.7	758	22	8
2003	97AB7746	2	36.3	68.6	89	76.5	1.2	1	15.5	4.59	29.5	180	58.2	416	9	38
2004	97AB7819	2	32.6	66.8	84	73.5	1.2	1	15.9	3.73	23.6	152	36.4	526	6	45
2005	97AB7973	2	34.7	82.3	78	74.5	1.2	1	16.3	4.31	26.9	166	56.4	322	2	48
2006	98AB11993	2	33.8	82.9	76	76.7	1.3	1	14.2	4.49	31.8	169	79.7	150	12	23
2007	98AB12044	2	34.4	78.6	76	75.6	1.3	1	15.8	4.63	29.6	163	73.6	382	9	38
2008	COLTER	6	31.5	56.8	79	77.4	1.2	1	12.4	3.79	31.4	116	50.2	276	26	2
2009	FOSTER	6	31.3	72.1	81	76.2	1.7	2	13.8	4.88	35.4	174	62.4	184	23	7
2010	MOREX	6	29.9	44.3	78	76.4	1.3	1	15.1	4.95	33.2	218	64.2	129	18	11
2011	SISLER	6	28.6	57.9	75	76.7	1.3	1	15.1	5.33	36.1	236	76.6	103	14	20
2012	STANDER	6	29.4	57.3	82	77.6	1.7	1	15.0	5.65	39.2	222	87.4	81	14	20
2013	92AB5180	6	31.4	54.5	74	78.1	1.8	1	13.2	5.09	39.4	181	64.1	119	29	1
2014	95AB15156	6	30.6	56.8	83	78.2	1.5	1	13.5	5.49	42.0	214	78.5	182	26	2
2015	96AB10452	6	30.8	75.3	81	77.2	1.9	1	15.1	6.13	40.8	212	84.7	148	21	9
2016	96AB10468	6	31.0	52.5	80	77.2	1.3	1	12.1	3.62	30.4	123	46.1	291	26	2
2017	97AB8333	6	29.5	61.6	78	78.9	1.4	2	12.2	4.24	37.3	124	60.1	150	24	5
1976	HARRINGTON MALT CHECK	2	39.9	94.8	75	81.4	1.5	1	11.8	5.26	47.3	124	72.8	109	46	
1997	HARRINGTON MALT CHECK	2	40.4	95.2	73	81.5	1.6	1	11.4	5.38	49.4	119	71.9	122	48	
2018	HARRINGTON MALT CHECK	2	40.1	94.9	75	81.6	1.5	1	11.4	5.23	47.7	117	78.4	192	44	
Minima			28.6	44.3	60	72.6	1.0		12.1	3.51	22.6	95	35.2	81	2	
Maxima			41.4	96.3	89	78.9	1.9		17.0	6.13	42.0	239	89.2	758	29	
Means			33.6	71.2	75	75.7	1.3		15.5	4.54	30.0	167	58.4	331	14	
Standard Deviations			3.1	12.2	6	1.4	0.2		1.2	0.61	4.7	36	15.5	188	6	
Coefficients of Variation			9.1	17.2	8	1.8	15.9		7.7	13.34	15.5	22	26.5	57	43	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 ABERDEEN BARLEY NURSERY J - ABERDEEN, ID

Table19

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight 6/64"	(mg)	(%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Score
2681	B2601	6	36.8	88.7	74	79.9	2.3	2	12.9	4.74	38.8	125	53.6	592	37	19
2682	COLTER	6	42.0	91.0	65	81.4	1.4	1	10.4	4.09	41.6	93	46.0	322	39	8
2683	FOSTER	6	41.0	97.5	73	78.8	1.7	2	13.5	5.08	39.1	149	56.5	411	38	13
2684	6B94-7012	6	40.0	95.9	69	79.5	1.5	1	14.1	5.72	42.7	132	65.5	332	31	23
2685	SISLER (BT433)	6	33.5	82.3	78	79.8	1.2	1	13.3	4.97	38.0	169	68.6	367	35	21
2687	STANDER	6	37.9	93.0	76	80.3	1.5	1	12.9	5.53	44.0	143	63.6	316	42	6
2688	91AB8479	6	39.9	94.2	68	79.4	1.2	1	13.9	5.13	39.7	147	60.6	332	38	13
2689	94AB13449	6	42.1	95.9	62	82.3	n.d.	3	11.0	5.14	47.2	95	54.3	180	47	2
2690	95AB15086	6	36.7	89.7	74	78.4	1.3	1	13.3	4.91	38.3	144	59.6	347	39	8
2691	95AB15176	6	38.5	86.9	71	78.4	1.4	1	12.7	4.57	36.9	155	47.8	287	38	13
2692	96AB9040	6	39.0	93.0	61	82.4	2.1	2	11.3	4.87	44.2	115	55.6	220	50	1
2693	96AB9084	6	41.1	96.2	68	78.3	1.5	1	13.6	5.20	39.2	107	65.0	439	28	25
2694	96AB9697	6	40.6	96.6	67	80.3	1.2	1	13.3	4.75	37.8	124	48.5	359	41	7
2695	96AB10573	6	37.8	90.9	72	81.1	1.7	1	13.1	6.03	46.6	122	67.9	253	30	24
2696	97AB7489	6	39.3	96.3	68	80.4	1.5	1	13.6	6.08	45.4	136	82.1	357	36	20
2697	97AB9084	6	39.3	96.8	74	80.9	1.6	1	12.9	5.32	43.1	167	53.5	356	46	3
2698	98AB12287	6	40.7	86.3	66	80.3	1.2	1	11.7	4.34	37.7	131	48.0	499	43	5
2699	98AB12364	6	39.5	97.7	60	80.6	1.6	1	12.7	5.24	42.4	126	62.3	336	39	8
2700	98AB12407	6	38.0	91.9	71	79.6	1.2	1	12.6	4.83	39.9	99	49.7	339	38	13
2701	98AB12435	6	38.9	92.0	70	80.2	1.5	2	11.5	4.20	38.1	92	47.9	500	38	13
2702	98AB12438	6	38.4	90.2	68	80.3	1.5	2	11.6	4.10	36.8	86	46.3	414	38	13
2703	98AB12475	6	34.9	79.2	65	80.7	1.2	1	11.8	4.31	38.2	93	49.9	460	39	8
2704	98AB12900	6	38.7	92.8	73	79.3	1.1	1	14.5	5.02	37.1	129	53.1	342	33	22
2705	98AB12904	6	38.0	90.9	65	81.1	1.7	1	12.3	4.74	39.6	111	52.7	332	46	3
2706	98AB12905	6	39.8	96.6	81	83.5	1.7	1	11.1	5.28	51.1	78	69.5	381	39	8
2686	MOREX MALT CHECK	6	30.9	69.7	70	79.2	1.6	1	12.2	5.66	48.4	136	70.1	126	37	
Minima			33.5	79.2	60	78.3	1.1		10.4	4.09	36.8	78	46.0	180	28	
Maxima			42.1	97.7	81	83.5	2.3		14.5	6.08	51.1	169	82.1	592	50	
Means			38.9	92.1	70	80.3	1.5		12.6	4.97	40.9	123	57.1	363	39	
Standard Deviations			2.0	4.7	5	1.3	0.3		1.1	0.54	3.8	25	9.1	89	5	
Coefficients of Variation			5.2	5.2	7	1.6	19.9		8.5	10.84	9.2	21	16.0	25	13	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 ABERDEEN WSU FINE MAPPING SERIES - ABERDEEN, ID

Table 20

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
2707	1 S0833 R1	6	44.2	96.3	62	72.6	1.8	2	14.9	3.89	27.2	84	34.9	570	11	61
2708	2 M1303 R1	6	37.2	83.3	73	73.6	1.4	1	17.2	4.77	27.7	172	49.6	426	26	19
2709	3 S0107 R1	6	44.4	95.6	70	71.4	1.6	1	15.9	3.97	25.2	97	37.0	564	12	60
2711	4 M1219 R1	6	38.7	86.6	78	75.5	1.3	1	16.5	5.00	31.5	177	51.2	549	26	19
2712	5 M0703 R1	6	38.9	94.1	76	76.0	1.3	1	17.2	5.27	31.8	188	52.4	454	26	19
2713	6 M0549 R1	6	35.7	86.7	77	76.2	1.4	1	16.2	5.06	31.5	177	47.8	587	26	19
2714	7 S0112 R1	6	45.5	96.5	69	73.3	1.9	2	15.0	3.90	27.0	85	37.2	748	11	61
2715	8 STEPTOE R1	6	42.5	94.1	71	72.8	n.d.	3	13.9	3.39	25.4	71	30.5	912	15	47
2716	9 M1115 R1	6	35.4	*74.3	75	76.1	1.3	1	15.1	4.62	31.2	169	45.8	478	28	15
2717	10 S1543 R1	6	43.4	93.7	68	73.4	n.d.	3	14.8	3.74	26.0	108	36.5	679	10	65
2718	11 M0641 R1	6	40.7	95.7	67	76.2	1.4	1	16.0	5.63	35.3	228	51.6	484	22	33
2719	12 S1101 R1	6	44.6	98.1	60	72.5	n.d.	3	15.1	3.77	25.7	75	34.5	867	10	65
2720	13 M1521 R1	6	40.7	96.4	77	78.4	1.5	1	14.2	4.98	35.5	157	50.3	505	37	2
2721	14S84414 R1	6	45.7	96.9	66	74.5	2.2	2	13.6	3.98	30.1	89	40.2	728	20	36
2722	15 S0312 R1	6	47.1	98.3	66	73.2	n.d.	3	14.1	3.64	26.7	75	33.1	836	10	65
2723	16 M0108 R1	6	38.3	94.8	70	77.7	1.4	1	15.1	4.68	31.8	163	52.2	394	30	14
2724	17 M0923 R1	6	39.1	95.4	70	77.8	1.5	2	15.2	5.16	35.2	178	53.5	487	25	28
2725	18 MOREX R1	6	39.3	96.1	74	78.7	1.5	1	14.5	5.11	36.6	168	55.3	411	31	13
2726	19 S0401 R1	6	45.5	96.7	68	73.3	n.d.	3	12.9	3.42	27.8	71	34.0	797	15	47
2727	20 S1345 R1	6	45.0	98.7	64	74.4	n.d.	3	13.6	3.54	27.6	70	33.7	919	15	47
2728	21 M1502 R1	6	39.9	97.4	71	77.8	1.6	2	14.3	4.74	34.1	142	48.3	590	32	10
2729	22 S1445 R1	6	41.5	95.9	67	74.0	n.d.	3	12.6	3.58	28.9	73	33.6	862	15	47
2730	23 S0503 R1	6	47.5	98.5	67	75.8	n.d.	3	12.4	3.50	30.0	71	34.5	782	20	36
2731	24 S1235 R1	6	43.6	97.8	62	73.3	n.d.	3	13.8	3.53	26.6	77	35.3	889	15	47
2732	25 M0402 R1	6	39.2	96.5	72	77.2	1.5	2	14.9	5.12	34.6	188	50.9	587	25	28
2733	26 M1563 R1	6	39.7	97.0	76	78.3	1.5	2	14.6	4.74	33.9	144	49.7	581	36	4
2735	27 S0615 R1	6	47.4	98.4	63	75.7	n.d.	3	12.7	3.84	32.5	78	40.6	791	19	41
2736	28 M0307 R1	6	36.5	86.1	78	78.3	1.5	2	13.0	4.45	34.4	148	47.3	543	34	6
2737	29 M0107 R1	6	37.7	94.8	68	77.9	1.3	1	14.6	4.85	34.6	151	52.1	376	33	9
2738	30 M1415 R1	6	39.8	93.0	72	77.9	1.3	1	14.8	4.75	33.3	185	54.7	469	26	19

Table 20

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
2739	31 S0731 R1	6	47.9	97.3	62	74.5	n.d.	3	13.5	3.81	28.7	68	37.4	852	15	47
2740	32 M0208 R1	6	38.5	95.6	71	78.2	1.3	1	15.7	5.39	34.7	223	57.0	462	23	31
2741	33 S0911 R1	6	43.5	97.9	65	74.0	n.d.	3	13.9	3.98	29.6	83	38.0	801	15	47
2742	34 S0205 R1	6	45.9	97.0	70	74.3	n.d.	3	13.0	3.44	26.6	71	33.8	818	15	47
2743	1 M1303 R2	6	40.9	96.0	72	75.1	1.4	2	16.2	4.70	30.1	181	49.5	564	25	28
2744	2 S0107 R2	6	38.6	96.2	71	77.1	1.4	1	16.1	5.28	34.8	168	59.9	501	27	16
2745	3 M0703 R2	6	39.9	93.9	72	76.3	1.3	1	16.5	5.24	33.5	189	53.2	549	26	19
2746	4 S0112 R2	6	48.0	98.3	66	74.1	n.d.	3	14.5	4.07	29.5	86	43.5	822	14	59
2747	5 M1115 R2	6	40.3	91.0	74	77.7	1.3	1	15.0	4.62	32.0	185	51.8	445	26	19
2748	6 S0205 R2	6	44.6	96.5	68	74.1	2.8	2	14.1	3.27	24.7	71	32.5	634	11	61
2749	7 M1521 R2	6	40.2	95.0	69	78.4	1.4	1	15.5	4.84	32.9	177	56.3	391	27	16
2750	8 S0312 R2	6	43.6	94.7	69	74.2	2.3	2	12.5	3.36	27.7	74	34.8	640	21	35
2751	9 M0923 R2	6	37.9	93.3	73	78.6	1.3	1	14.5	4.98	35.4	175	55.2	358	27	16
2752	10 S0401 R2	6	45.4	97.3	71	73.7	3.1	2	13.0	3.19	25.8	73	34.3	633	16	43
2753	11 M1502 R2	6	41.2	97.0	75	77.8	1.6	2	14.8	4.80	33.1	145	52.8	430	32	10
2754	12 S0503 R2	6	47.4	98.4	65	75.4	2.3	2	12.9	3.49	27.4	77	37.6	610	16	43
2755	13 M0402 R2	6	40.0	97.5	74	77.8	1.4	1	14.9	5.23	36.3	179	55.3	504	23	31
2756	14 S0615 R2	6	47.7	98.0	62	76.2	2.1	2	13.0	3.75	29.8	74	41.8	606	20	36
2757	15 M0107 R2	6	46.8	97.6	65	75.1	2.2	1	12.9	3.69	28.7	80	39.9	571	17	42
2759	16 S0731 R2	6	46.7	97.5	72	74.3	2.3	2	12.6	3.52	29.4	60	36.5	712	16	43
2760	17 MOREX R2	6	38.9	94.8	76	78.5	1.5	1	15.0	5.09	35.0	162	52.9	423	34	6
2761	18 S0833 R2	6	42.7	94.8	66	74.2	2.6	2	12.5	3.35	27.0	63	29.8	796	16	43
2762	19 M0208 R2	6	37.7	94.3	73	78.0	1.5	1	15.5	5.26	35.9	207	51.9	488	26	19
2763	20 S0911 R2	6	42.2	96.5	61	73.5	2.4	2	14.1	3.72	26.9	74	33.5	774	11	61
2764	21 M0307 R2	6	39.7	93.2	77	77.8	1.6	2	14.5	4.74	34.9	158	46.4	536	32	10
2765	22 S1101 R2	6	44.2	96.8	62	73.2	n.d.	3	14.3	3.43	24.8	63	28.4	757	10	65
2766	23 M1563 R2	6	39.8	96.2	68	78.1	1.6	1	15.1	5.21	36.5	133	51.5	522	34	6
2767	24 S1235 R2	6	43.4	97.6	64	75.1	n.d.	3	12.3	3.55	30.9	63	30.1	776	20	36
2768	25 M0549 R2	6	39.5	96.6	76	78.6	1.6	2	15.1	5.18	34.8	159	48.1	426	36	4
2769	26 S1345 R2	6	42.3	95.5	66	75.4	n.d.	3	11.5	3.17	28.2	56	29.8	809	20	36

Table 20

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
2770	27 M1415 R2	6	39.5	90.9	72	78.6	1.6	2	13.8	4.84	37.8	167	50.3	386	38	1
2771	28 M0108 R2	6	38.6	95.4	73	78.6	1.6	1	14.3	4.91	36.1	160	50.8	309	37	2
2772	29 M1219 R2	6	39.3	89.3	74	75.4	1.4	1	14.7	4.60	32.1	149	46.8	394	26	19
2773	30 S1445 R2	6	40.2	93.7	66	73.3	n.d.	3	13.3	3.55	26.7	72	31.8	643	15	47
2774	31 STEPTOE R2	6	46.3	97.5	60	74.2	n.d.	3	13.5	3.23	24.4	59	27.3	680	15	47
2775	32 S1543 R2	6	44.7	95.9	59	74.0	n.d.	3	13.7	3.69	28.4	83	34.7	570	15	47
2776	33 M0641 R2	6	40.3	95.2	70	76.5	1.5	1	16.0	5.55	35.6	222	52.5	411	22	33
2777	34 SB4414 R2	6	43.7	94.4	65	74.5	n.d.	3	13.6	3.69	28.3	82	37.7	552	15	47
2710	MOREX MALT CHECK	6	31.0	69.5	71	79.8	1.6	1	12.3	5.76	49.5	135	69.9	116	37	
2734	MOREX MALT CHECK	6	31.3	71.4	71	79.4	1.5	1	12.7	5.74	46.6	155	71.7	110	38	
2758	MOREX MALT CHECK	6	30.9	71.0	70	79.3	1.7	1	12.4	5.61	48.4	144	70.3	82	43	
Minima			35.4	83.3	59	71.4	1.3		11.5	3.17	24.4	56	27.3	309	10	
Maxima			48.0	98.7	78	78.7	3.1		17.2	5.63	37.8	228	59.9	919	38	
Means			42.0	95.3	69	75.7	1.7		14.4	4.30	30.8	124	43.3	603	22	
Standard Deviations			3.4	3.1	5	2.0	0.4		1.3	0.74	3.8	52	9.1	163	8	
Coefficients of Variation			8.1	3.2	7	2.7	26.6		8.8	17.23	12.2	42	21.0	27	37	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 TETONIA WSU FINE MAPPING SERIES - TETONIA, ID

Table 21

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
2778	1 S0833 R1	6	36.2	76.2	85	72.9	n.d.	3	13.3	3.40	25.6	75	28.9	636	13	54
2780	2 M1303 R1	6	31.0	40.2	82	72.7	1.7	2	15.9	3.88	24.9	152	38.5	439	12	60
2781	3 S0107 R1	6	36.8	69.3	85	72.2	2.5	2	13.4	3.41	26.2	77	31.5	555	11	63
2782	4 M1219 R1	6	32.1	33.5	85	73.0	1.4	2	15.2	4.34	29.2	159	40.3	412	17	33
2783	5 M0703 R1	6	33.2	48.2	86	74.9	1.4	2	14.5	4.14	29.3	156	41.0	404	17	33
2784	6 M0549 R1	6	31.9	56.4	82	76.5	1.6	2	13.9	4.14	30.2	137	38.5	509	14	48
2785	7 S0112 R1	6	39.4	85.7	88	74.2	n.d.	3	11.0	3.44	32.3	61	34.1	516	20	11
2786	8 STEPTOE R1	6	39.5	89.2	88	74.5	n.d.	3	9.7	2.98	33.0	51	27.0	637	15	41
2787	9 M1115 R1	6	32.0	47.8	85	75.8	1.4	2	13.5	4.09	31.3	161	37.3	431	14	48
2788	10 S1543 R1	6	37.8	75.9	80	73.2	1.9	2	12.8	3.61	29.7	92	36.7	498	14	48
2789	11 M0641 R1	6	35.3	74.7	82	75.5	1.4	2	14.5	4.20	29.8	212	40.3	400	13	54
2790	12 S1101 R1	6	38.9	89.2	88	74.7	2.3	2	10.7	3.06	30.8	57	29.2	665	21	7
2791	13 M1521 R1	6	34.9	74.4	84	77.0	1.6	2	13.5	3.99	31.0	138	40.0	604	22	4
2792	14 SB4414 R1	6	36.7	61.9	86	71.9	1.8	2	12.4	3.33	27.1	80	33.8	670	16	37
2793	15 S0312 R1	6	37.1	75.3	84	71.8	1.9	2	13.3	3.34	26.6	69	31.2	625	14	48
2794	16 M0108 R1	6	30.8	46.5	78	75.3	1.4	2	14.7	4.28	30.0	163	42.6	485	13	54
2795	17 M0923 R1	6	33.2	58.1	84	77.2	1.6	2	13.0	4.28	35.2	136	46.2	410	22	4
2796	18 MOREX R1	6	33.7	73.9	86	78.7	n.d.	3	12.0	4.31	37.3	115	46.6	430	29	1
2797	19 S0401 R1	6	40.0	88.2	90	73.7	n.d.	3	10.6	3.19	31.8	56	32.2	577	20	11
2798	20 S1345 R1	6	39.1	90.4	85	75.2	n.d.	3	10.6	3.21	31.4	54	32.9	643	20	11
2799	21 M1502 R1	6	34.5	81.7	84	77.5	n.d.	3	12.1	3.86	33.6	102	37.8	662	20	11
2801	22 S1445 R1	6	36.2	86.6	88	74.1	n.d.	3	11.7	3.40	31.4	65	34.2	654	20	11
2802	23 S0503 R1	6	38.2	84.8	87	73.4	n.d.	3	12.3	3.37	29.4	71	34.0	680	20	11
2803	24 S1235 R1	6	37.4	86.6	84	74.0	n.d.	3	12.0	3.25	29.1	73	30.7	778	20	11
2804	25 M0402 R1	6	34.2	77.7	82	77.9	n.d.	3	12.5	4.03	34.3	138	40.9	564	23	2
2805	26 M1563 R1	6	34.0	84.9	84	78.5	n.d.	3	12.6	4.08	34.6	115	41.1	565	23	2
2806	27 S0615 R1	6	37.6	74.1	85	71.8	n.d.	3	12.6	3.48	27.6	80	36.7	681	13	54
2807	28 M0307 R1	6	31.4	50.2	87	75.9	n.d.	3	13.2	4.00	31.7	142	38.8	577	16	37
2808	29 M0107 R1	6	33.4	76.7	79	76.9	n.d.	3	12.9	4.04	33.5	139	41.4	455	21	7
2809	30 M1415 R1	6	34.4	61.4	89	76.2	n.d.	3	13.0	3.89	32.3	156	40.8	429	21	7

Table 21

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (ppm)	glucan	Quality Score	Rank	
2810	31 S0731 R1	6	38.4	83.4	89	73.0	n.d.	3	11.4	3.22	30.3	54	31.4	630	20	11
2811	32 M0208 R1	6	33.3	67.6	82	77.2	n.d.	3	13.4	4.11	32.5	190	41.5	357	14	48
2812	33 S0911 R1	6	40.2	94.3	86	74.5	n.d.	3	11.7	3.35	29.8	66	32.4	721	20	11
2813	34 S0205 R1	6	40.3	91.2	87	73.6	n.d.	3	11.3	3.06	29.5	59	29.8	657	20	11
2814	1 M1303 R2	6	35.4	80.9	83	75.3	n.d.	3	13.4	3.93	30.4	140	37.5	374	22	4
2815	2 S0107 R2	6	41.0	93.1	88	74.1	n.d.	3	11.3	3.18	30.3	66	31.2	679	20	11
2816	3 M0703 R2	6	33.9	63.4	82	75.9	n.d.	3	13.6	4.20	33.1	157	37.7	465	17	33
2817	4 S0112 R2	6	40.1	83.9	88	73.3	n.d.	3	12.1	3.36	29.0	75	32.0	719	20	11
2818	5 M1115 R2	6	34.3	70.8	78	75.9	n.d.	3	14.1	3.93	29.8	169	41.2	581	16	37
2819	6 S0205 R2	6	38.3	88.3	85	72.4	n.d.	3	11.9	3.19	29.0	82	33.0	721	20	11
2820	7 M1521 R2	6	34.6	66.6	84	76.7	n.d.	3	13.1	3.96	32.0	150	42.5	355	21	7
2822	8 S0312 R2	6	38.1	85.2	86	72.2	n.d.	3	11.8	3.12	28.0	69	32.1	643	20	11
2823	9 M0923 R2	6	33.7	70.9	83	76.7	n.d.	3	14.2	4.31	32.6	174	45.8	301	15	41
2824	10 S0401 R2	6	39.1	88.3	88	73.7	n.d.	3	11.3	3.16	30.6	69	33.6	628	20	11
2825	11 M1502 R2	6	34.6	80.8	80	76.5	n.d.	3	13.6	3.73	29.6	120	40.1	554	19	30
2826	12 S0503 R2	6	38.9	89.4	85	73.6	n.d.	3	11.4	3.23	29.4	67	32.7	572	20	11
2827	13 M0402 R2	6	32.9	64.6	79	75.9	n.d.	3	13.5	4.15	31.2	169	45.0	456	18	31
2828	14 S0615 R2	6	37.7	78.8	85	71.9	n.d.	3	13.0	3.58	29.5	88	38.2	663	15	41
2829	15 M0107 R2	6	32.0	57.9	78	74.2	n.d.	3	15.8	4.37	29.4	195	45.7	376	12	60
2830	16 S0731 R2	6	37.5	49.1	83	73.7	n.d.	3	13.7	3.95	29.8	130	40.9	521	18	31
2831	17 MOREX R2	6	31.5	87.5	82	75.1	n.d.	3	14.1	3.95	28.9	131	41.2	649	17	33
2832	18 S0833 R2	6	39.8	89.9	85	73.2	n.d.	3	11.7	3.13	29.1	70	31.8	742	20	11
2833	19 M0208 R2	6	31.8	60.4	76	75.6	n.d.	3	15.1	4.32	29.1	219	41.2	463	8	67
2834	20 S0911 R2	6	37.2	86.0	81	72.3	n.d.	3	12.8	3.50	28.2	79	33.8	744	15	41
2835	21 M0307 R2	6	32.1	51.9	80	74.5	n.d.	3	15.4	4.08	28.2	177	39.5	609	5	68
2836	22 S1101 R2	6	36.9	83.4	82	71.4	n.d.	3	12.7	3.15	26.3	69	30.0	794	15	41
2837	23 M1563 R2	6	33.9	83.4	83	76.5	n.d.	3	14.0	4.12	31.6	125	40.4	511	14	48
2838	24 S1235 R2	6	35.8	84.8	82	73.1	n.d.	3	11.7	3.27	28.5	64	29.1	711	20	11
2839	25 M0549 R2	6	32.7	71.6	79	75.8	n.d.	3	14.3	4.06	30.0	162	37.7	477	12	60
2840	26 S1345 R2	6	36.1	80.4	80	72.0	n.d.	3	12.9	3.17	26.3	71	29.8	769	15	41

Table 21

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
2842	27 M1415 R2	6	33.2	56.1	80	74.6	1.2	2	15.0	4.26	29.5	208	43.9	356	10	64
2843	28 M0108 R2	6	30.5	50.1	78	74.5	1.2	2	16.2	4.65	29.2	211	45.0	328	16	37
2844	29 M1219 R2	6	33.0	50.9	79	73.8	1.4	2	15.9	4.25	27.3	193	42.2	501	10	64
2845	30 S1445 R2	6	34.4	82.4	83	72.0	n.d.	3	13.7	3.43	26.3	84	31.1	771	15	41
2846	31 STEPTOE R2	6	40.3	90.5	79	72.2	n.d.	3	12.5	3.14	26.3	68	29.7	836	20	11
2847	32 S1543 R2	6	37.8	80.6	73	71.4	n.d.	3	14.7	3.47	25.0	101	35.2	742	10	64
2848	33 M0641 R2	6	34.8	75.5	74	74.7	1.2	2	15.6	4.39	29.6	235	40.5	416	13	54
2849	34 SB4414 R2	6	37.9	74.9	79	72.0	n.d.	3	12.7	3.39	28.0	91	34.4	694	13	54
2779	MOREX MALT CHECK	6	30.6	71.8	68	79.8	1.7	1	12.7	5.66	47.8	130	73.1	197	31	
2800	MOREX MALT CHECK	6	31.1	71.3	68	79.5	1.9	1	12.7	5.75	48.1	126	70.7	174	27	
2821	MOREX MALT CHECK	6	31.0	71.0	70	78.5	1.7	1	12.1	5.48	47.8	141	71.6	146	40	
2841	MOREX MALT CHECK	6	31.2	71.7	62	79.0	1.6	1	12.3	5.56	46.8	140	70.1	130	40	
Minima			30.5	33.5	73	71.4	1.2		9.7	2.98	24.9	51	27.0	301	5	
Maxima			41.0	94.3	90	78.7	2.5		16.2	4.65	37.3	235	46.6	836	29	
Means			35.7	73.7	83	74.4	1.6		13.1	3.72	29.9	117	36.9	569	17	
Standard Deviations			2.9	14.9	4	1.9	0.4		1.5	0.45	2.5	51	5.1	134	4	
Coefficients of Variation			8.1	20.2	4	2.5	22.8		11.1	12.17	8.2	43	14.0	24	25	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 ABERDEEN MONTANA SERIES - ABERDEEN, ID

Table 22

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort				Alpha-	Beta-	Quality	Overall	
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
2850	MT 910189	2	50.4	96.9	64	80.0	1.4	1	13.2	5.20	41.6	139	69.2	358	36	5
2851	MT 920073	2	48.3	95.9	55	76.8	1.4	1	15.6	5.02	32.9	165	57.9	670	19	23
2852	MT 940214	2	47.6	94.4	64	77.7	1.3	1	13.6	4.74	36.3	109	59.2	390	23	17
2853	MT 950186	2	48.8	98.0	60	78.2	1.4	1	13.7	3.99	29.5	69	50.4	450	20	21
2854	MTLB 5	2	45.3	96.8	62	78.8	1.2	1	13.4	4.53	34.3	134	68.7	387	32	10
2855	MTLB 6	2	46.3	95.9	59	76.9	1.1	1	14.6	4.56	32.7	130	66.7	519	23	17
2856	MTLB 13	2	45.6	94.6	62	78.4	1.0	1	13.6	4.46	34.0	122	64.9	426	30	12
2857	MT 960099	2	45.7	90.6	57	79.2	1.5	1	12.9	5.11	40.6	128	80.3	191	39	3
2858	MT 960100	2	45.5	94.9	68	79.7	1.5	1	13.1	4.92	39.1	119	82.1	175	41	2
2859	MT 960101	2	45.7	96.6	67	80.3	1.6	1	12.8	5.00	41.0	109	88.4	182	43	1
2860	MT 960222	2	48.7	99.0	70	78.4	1.0	1	11.9	3.59	31.0	83	45.9	546	33	9
2862	MT 960225	2	49.5	97.9	70	78.0	1.4	1	11.6	3.90	33.9	117	53.0	521	37	4
2863	MT 960226	2	51.0	99.2	65	77.9	1.1	1	13.0	4.09	33.0	103	45.5	526	28	15
2864	MT 960228	2	48.7	98.8	62	77.9	1.5	2	12.3	3.69	30.5	111	42.8	419	35	6
2865	MT 970026	2	52.4	99.1	60	78.3	1.1	1	12.8	3.77	31.1	115	41.5	616	35	6
2866	MT 970107	2	49.2	98.0	62	78.1	1.0	1	13.6	3.87	29.1	110	46.7	604	30	12
2867	MT 970110	2	48.5	98.2	62	78.5	1.8	1	12.8	3.92	31.6	89	44.5	690	28	15
2868	MT 970116	2	50.6	98.5	62	78.5	1.1	1	13.6	4.11	31.4	115	49.4	406	30	12
2869	MT 970148	2	46.4	95.1	58	79.2	1.6	2	12.8	4.72	38.1	99	62.7	342	31	11
2870	MT 970155	2	48.9	98.1	62	78.0	2.0	2	13.0	4.88	38.5	110	61.0	276	34	8
2871	MT 970205	2	56.0	99.3	60	78.1	1.1	1	13.7	3.90	30.5	88	38.3	656	20	21
2872	MT 9700228	2	45.2	98.4	66	76.6	1.0	1	14.1	4.04	29.3	134	40.4	428	23	17
2873	MT 970229	2	49.2	98.3	65	77.1	1.8	2	13.6	4.02	30.5	109	41.3	507	22	20
2874	HARRINGTON	2	43.3	90.8	54	77.5	1.1	1	14.2	4.17	29.8	88	42.0	633	19	23
2861	HARRINGTON MALT CHECK	2	40.0	94.3	75	80.6	1.4	1	11.5	5.23	48.3	125	73.5	106	43	
Minima			43.3	90.6	54	76.6	1.0		11.6	3.59	29.1	69	38.3	175	19	
Maxima			56.0	99.3	70	80.3	2.0		15.6	5.20	41.6	165	88.4	690	43	
Means			48.2	96.8	62	78.3	1.3		13.3	4.34	33.8	112	56.0	455	30	
Standard Deviations			2.8	2.4	4	1.0	0.3		0.9	0.50	4.0	21	14.4	153	7	
Coefficients of Variation			5.7	2.5	7	1.2	22.2		6.4	11.58	11.9	19	25.8	34	24	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 TETONIA NONREPLICATED SERIES - TETONIA, ID

Table 23

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
2875	95AB18478	2	36.7	85.3	78	75.5	1.2	1	16.3	4.55	28.2	163	53.5	486	16	1
2876	96AB10328	2	36.6	87.6	78	76.5	1.1	1	16.2	4.82	30.3	178	52.4	305	16	1
2877	97AB6643	2	38.8	99.2	78	76.8	1.2	2	15.9	4.78	31.2	182	56.1	323	15	4
2878	97AB7819	2	34.6	82.2	78	74.8	1.1	2	15.6	3.57	23.1	148	34.1	493	1	18
2879	98AB11402	2	35.3	72.0	83	76.0	1.0	1	15.9	4.67	29.9	181	47.7	321	16	1
2880	98AB11430	2	36.5	90.6	88	77.1	1.2	1	14.2	4.37	31.2	167	61.8	213	10	9
2882	98AB11456	2	34.6	77.3	72	77.0	1.1	1	14.5	4.31	29.8	177	54.3	384	6	14
2883	CRYSTAL II	2	36.2	75.8	79	76.0	1.2	1	15.6	4.54	29.5	180	66.4	309	9	10
2884	98AB11478	2	33.9	77.6	80	77.0	1.0	1	14.0	3.98	29.5	153	57.4	155	5	15
2885	98AB11482	2	33.4	82.6	78	75.8	1.1	1	15.1	4.17	27.9	173	60.7	163	5	15
2886	98AB11695	2	34.1	81.8	70	74.1	1.7	2	15.5	3.71	24.2	132	41.8	393	12	5
2887	98AB11707	2	34.9	74.5	76	76.0	1.2	1	15.5	4.93	32.3	182	59.2	227	12	5
2888	HARRINGTON	2	32.7	63.1	69	75.0	1.2	2	15.9	4.16	26.4	131	45.3	509	12	5
2889	98AB11720	2	35.5	79.2	87	74.6	n.d.	3	14.3	3.54	26.0	121	32.6	576	7	12
2890	98AB11761	2	35.0	73.4	78	75.6	1.3	1	15.0	4.73	33.3	147	64.7	210	12	5
2891	98AB11771	2	38.5	84.3	77	74.2	1.4	2	14.7	3.89	27.9	141	35.9	456	7	12
2892	98AB11789	2	37.2	83.2	77	75.2	1.6	1	16.2	5.12	31.7	153	57.0	307	5	15
2893	98AB12072	2	36.3	84.5	75	76.6	1.1	1	15.9	4.64	29.5	196	68.6	321	9	10
2881	HARRINGTON MALT CHECK	2	40.0	95.0	74	80.6	1.4	1	11.9	5.30	46.1	126	70.3	89	43	
Minima			32.7	63.1	69	74.1	1.0		14.0	3.54	23.1	121	32.6	155	1	
Maxima			38.8	99.2	88	77.1	1.7		16.3	5.12	33.3	196	68.6	576	16	
Means			35.6	80.8	78	75.8	1.2		15.4	4.36	29.0	161	52.7	342	10	
Standard Deviations			1.7	7.9	5	1.0	0.2		0.7	0.47	2.7	21	11.0	124	4	
Coefficients of Variation			4.7	9.8	6	1.3	14.4		4.8	10.85	9.4	13	20.9	36	46	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 TETONIA B NURSERY - TETONIA, ID

Table 24

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	S/T	DP	amylase	glucan	Quality	Score	Rank
3762	95SR296C	2	33.8	73.7	75	77.7	1.6	1	16.4	5.63	35.1	157	60.2	322	5	27
3763	97ID1269A	6	29.8	55.6	75	76.9	1.6	1	14.7	5.47	38.4	222	65.6	109	14	7
3764	97ID1270	6	28.1	59.6	80	76.8	1.5	1	15.1	5.58	37.8	202	78.8	134	14	7
3765	97ID1225	6	33.2	75.9	75	77.1	2.0	2	15.3	5.70	38.8	166	65.1	222	19	4
3766	96RWA1192	6	31.3	61.8	77	76.9	1.7	2	15.0	5.83	40.2	168	68.2	88	24	2
3767	95SR34A	2	35.5	82.4	74	78.2	1.6	2	15.2	5.13	35.4	151	55.9	321	8	20
3768	96RWA1211	6	27.7	49.6	78	77.6	1.6	2	15.4	5.82	39.2	188	68.6	84	11	18
3769	97ID1269B	6	29.4	56.5	76	77.2	1.5	2	15.3	5.61	38.0	205	65.0	114	13	10
3770	96RWA1218	6	28.3	46.0	75	77.1	1.7	1	15.5	6.10	40.4	179	77.0	61	12	14
3772	95SR35E	2	33.9	76.8	80	77.9	1.4	1	15.2	5.44	36.6	196	60.2	193	8	20
3773	95SR316A	2	33.9	69.0	76	77.1	1.5	1	15.9	5.22	33.0	167	71.5	303	5	27
3774	95SR149C	2	33.0	72.5	72	76.6	1.1	1	15.5	4.77	31.3	152	54.4	365	13	10
3775	95SR132B	2	32.0	61.8	75	76.6	1.4	1	16.0	5.26	33.2	165	53.4	223	12	14
3776	96RWA1194	6	30.6	54.7	74	77.1	1.9	1	15.3	6.06	40.9	180	70.2	57	14	7
3777	95SR343C	2	34.4	74.6	80	77.4	1.5	1	16.2	5.34	33.4	179	59.0	229	8	20
3778	95SR280C	2	35.2	67.6	75	76.9	1.6	1	16.3	5.68	35.5	177	64.2	304	5	27
3779	95SR267A	2	34.3	73.9	80	77.7	1.4	1	15.1	5.03	34.5	167	56.3	290	12	14
3780	BANCROFT	2	34.3	74.7	76	78.6	1.5	1	14.8	5.35	36.5	154	53.7	309	13	10
3781	STANDER	6	29.0	56.1	75	78.6	1.7	1	14.6	6.36	43.9	206	82.2	54	16	5
3782	97ID1049	2	34.8	76.8	68	76.4	1.5	1	16.3	5.65	34.9	218	68.8	243	8	20
3783	97ID1234	6	28.4	49.7	77	78.2	1.5	1	14.4	6.08	43.5	197	82.3	87	20	3
3784	HARRINGTON	2	31.9	64.0	72	77.6	1.3	1	14.9	5.07	35.2	135	60.4	258	16	5
3785	GARNET	2	34.4	81.5	80	77.6	1.6	1	16.1	5.64	36.6	201	70.0	164	8	20
3786	97ID1199	2	31.8	50.0	68	76.8	2.0	1	16.0	5.51	34.6	166	71.4	294	8	20
3787	95SR19D	2	34.6	71.1	80	77.9	1.3	1	15.0	5.05	34.1	174	56.5	284	12	14
3788	96RWA1222	6	31.7	54.0	79	79.7	1.5	1	14.4	5.69	41.7	164	72.2	120	32	1
3789	97ID1192	2	30.6	53.0	70	*74.2	1.4	1	*17.9	5.73	33.0	222	72.4	349	5	27
3790	95RWA82	2	39.1	88.8	72	76.4	1.6	1	16.2	5.30	33.4	199	62.3	270	13	10
3791	MOREX	6	28.2	42.5	72	77.4	1.7	1	15.5	5.76	38.4	206	66.2	70	10	19
3792	CRYSTAL	2	32.9	57.7	76	76.7	1.7	1	16.7	5.86	35.8	193	77.9	285	8	20

Table 24

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score
3771	MOREX MALT CHECK	6	31.8	74.0	71	79.4	1.7	1	12.6	5.78	49.3	143	70.8	96	38
3793	MOREX MALT CHECK	6	31.4	71.9	70	79.2	1.7	1	12.6	5.98	50.7	146	66.9	76	34
Minima			27.7	42.5	68	76.4	1.1		14.4	4.77	31.3	135	53.4	54	5
Maxima			39.1	88.8	80	79.7	2.0		16.7	6.36	43.9	222	82.3	365	32
Means			32.2	64.4	75	77.4	1.6		15.5	5.56	36.8	182	66.3	207	12
Standard Deviations			2.8	12.1	3	0.8	0.2		0.6	0.36	3.2	23	8.4	101	6
Coefficients of Variation			8.6	18.8	5	1.0	12.2		4.1	6.52	8.8	13	12.7	49	49

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Bregitzer, USDA/ARS, Aberdeen

2000 ABERDEEN B NURSERY - ABERDEEN, ID

Table 25

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
3794	95SR296C	2	50.3	96.4	69	80.6	1.5	1	13.1	5.42	43.7	107	58.1	457	36	27
3795	97ID1269A	6	38.9	88.3	68	79.3	1.5	1	11.8	5.12	47.3	130	54.8	308	43	13
3796	97ID1270	6	40.2	95.5	75	79.3	1.5	1	11.2	5.18	47.0	110	65.2	524	36	27
3797	97ID1225	6	44.2	97.0	65	78.4	1.6	1	11.9	5.11	44.7	110	60.3	351	38	21
3798	96RWA1192	6	42.7	88.1	63	80.0	1.5	1	12.4	5.27	44.2	117	65.1	228	44	11
3799	95SR34A	2	46.9	92.7	71	80.8	1.3	1	11.6	4.56	42.8	118	50.9	303	52	5
3800	96RWA1211	6	41.3	95.2	65	80.9	1.7	1	12.5	5.92	50.8	130	64.6	203	38	21
3801	97ID1269B	6	41.3	95.0	69	78.7	1.5	1	12.4	5.33	43.5	135	57.1	329	42	15
3802	96RWA1218	6	40.6	90.2	67	80.6	1.5	1	11.4	5.14	47.5	100	65.7	270	42	15
3803	95SR35E	2	48.5	94.3	70	81.0	1.4	1	11.9	4.98	43.9	126	52.4	294	58	1
3804	95SR316A	2	46.3	91.6	66	81.0	1.5	1	12.5	4.72	39.9	108	61.9	151	38	21
3805	95SR149C	2	44.3	89.9	67	80.8	1.5	1	10.7	4.61	44.7	98	50.8	101	54	3
3806	95SR132B	2	44.8	92.3	72	80.6	1.4	1	12.2	4.75	40.8	94	46.9	160	51	6
3807	96RWA1194	6	42.1	93.3	64	79.0	1.7	1	13.0	5.93	48.5	130	63.9	150	38	21
3808	95SR343C	2	48.5	96.8	71	82.2	1.5	1	10.6	4.74	48.5	98	58.2	258	46	8
3809	95SR280C	2	47.4	91.5	66	80.4	1.6	1	12.8	5.09	41.5	119	63.0	384	43	13
3810	95SR267A	2	48.5	94.9	65	80.0	1.4	1	12.7	4.79	39.6	122	51.0	411	42	15
3811	BANCROFT	2	46.9	96.1	63	80.7	1.4	1	12.4	5.16	43.3	126	53.2	278	51	6
3812	STANDER	6	40.3	94.1	72	80.2	1.8	1	12.5	6.31	52.0	124	71.6	249	35	29
3813	97ID1049	2	50.6	95.5	66	80.8	1.5	1	12.5	5.06	41.7	130	55.2	238	46	8
3814	97ID1234	6	39.6	92.6	74	80.1	1.5	1	12.3	5.68	49.9	107	68.3	340	35	29
3815	HARRINGTON	2	43.4	88.9	62	80.7	1.4	1	12.0	5.03	42.8	98	56.5	249	46	8
3816	GARNET	2	49.3	97.6	71	82.6	1.5	1	12.1	5.39	48.1	131	67.5	166	42	15
3817	97ID1199	2	48.2	91.6	61	81.3	1.6	1	11.9	4.81	43.8	105	68.6	141	55	2
3819	95SR19D	2	45.5	90.0	68	81.2	1.3	1	11.5	4.87	44.9	120	55.9	290	54	3
3820	96RWA1222	6	42.8	93.5	64	81.4	1.6	1	11.6	5.43	48.4	103	66.8	214	38	21
3821	97ID1192	2	44.1	99.4	65	81.4	1.5	1	12.2	5.54	47.2	99	67.4	208	42	15
3822	95RWA82	2	48.9	95.1	63	79.5	1.6	1	13.3	4.89	39.1	110	54.0	171	42	15
3823	MOREX	6	38.6	92.2	72	78.3	1.4	1	13.9	5.47	39.9	*163	53.7	260	38	21
3824	CRYSTAL	2	47.9	94.4	70	80.6	1.5	1	12.1	5.26	44.5	115	66.2	366	44	11

Table 25

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank
3793	MOREX MALT CHECK	6	31.4	71.9	70	79.2	1.7	1	12.6	5.98	50.7	146	66.9	76	34
3818	HARRINGTON MALT CHECK	2	39.7	95.0	74	81.9	1.4	1	11.7	5.77	53.1	123	79.0	56	42
Minima			38.6	88.1	61	78.3	1.3		10.6	4.56	39.1	94	46.9	101	35
Maxima			50.6	99.4	75	82.6	1.8		13.9	6.31	52.0	135	71.6	524	58
Means			44.8	93.5	67	80.4	1.5		12.2	5.18	44.8	114	59.8	268	44
Standard Deviations			3.6	2.9	4	1.0	0.1		0.7	0.41	3.5	12	6.7	99	6
Coefficients of Variation			8.1	3.1	6	1.3	7.7		5.8	7.93	7.7	11	11.2	37	15

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Bregitzer, USDA/ARS, Aberdeen

2001 YUMA SERIES - YUMA, AZ

Table 26

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort		Alpha-	Beta-			
			Weight 6/64"	(mg)	Color (%)	Extract (Agtron)	Wort (%)	Wort Color	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score
3962	ML2323-2-2-1	2	43.5	96.9	70	79.3	n.d.	3	11.0	4.11	38.1	60	31.7	767	24
3961	MOREX MALT CHECK	6	30.9	71.8	70	79.5	1.7	1	13.1	6.09	50.1	142	72.4	58	31

Sample Submitted by D. Wesenberg, USDA/ARS - Aberdeen

2000 EXPERIMENT 220100, IRRIGATED INTRASTATE TRIAL - BOZEMAN, MT

Table 27

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Protein	S/T	DP						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
1157	SK 76333	2	37.0	75.6	73	80.0	1.4	2	11.7	4.86	44.1	108	59.6	267	37	7
1158	MTLB 30	2	37.4	84.6	69	80.2	1.6	1	12.0	4.64	40.5	97	63.8	303	35	11
1159	CI 15773	6	36.7	76.6	73	77.2	n.d.	3	14.2	5.06	36.2	*181	53.4	352	22	30
1160	2B914947	2	37.6	75.5	72	77.8	1.3	1	12.6	4.55	37.4	102	54.1	357	22	30
1161	2B965038	2	44.9	94.1	72	82.0	2.5	1	11.9	*6.07	*51.7	110	78.3	163	42	3
1162	2B965119	2	38.4	83.5	73	79.0	1.5	1	12.7	4.70	37.8	112	62.1	322	27	23
1163	6B932978	6	33.9	70.6	76	78.2	1.5	2	12.4	4.75	40.7	159	62.3	341	42	3
1164	AC99 11	2	39.1	82.3	67	78.9	1.4	1	12.1	4.25	37.4	116	51.6	117	36	10
1165	PI601736	2	37.7	79.2	69	77.8	1.7	2	12.5	3.81	31.2	92	36.7	427	10	57
1166	C 22	2	41.6	92.0	70	78.0	n.d.	3	12.1	3.46	30.3	76	36.8	392	23	28
1167	C 32	2	37.7	71.8	71	77.6	n.d.	3	12.2	3.54	29.9	93	32.2	453	10	57
1168	C 37	2	38.7	83.2	63	78.2	n.d.	3	12.8	4.10	33.7	115	39.2	346	22	30
1169	MT910189	2	45.4	90.9	72	79.5	1.4	1	12.1	4.92	42.4	117	61.5	365	48	2
1170	MT940214	2	40.3	76.7	74	80.3	1.4	1	12.1	4.68	40.9	86	52.5	317	39	6
1171	MT950186	2	40.1	83.3	62	77.9	2.5	2	12.2	3.88	33.2	53	41.6	458	22	30
1172	MTLB 5	2	36.8	73.3	65	76.8	1.2	1	15.0	4.91	34.5	139	61.8	429	13	51
1173	MTLB 6	2	40.6	90.0	72	78.6	1.5	1	12.8	4.57	36.9	120	63.1	407	34	12
1174	MTLB 13	2	40.8	86.2	73	78.4	1.1	1	12.3	4.26	36.8	106	60.3	348	27	23
1175	MT960099	2	38.7	73.7	69	78.9	1.4	1	11.8	4.68	41.7	106	68.5	265	37	7
1176	MT960100	2	37.9	72.0	72	79.1	1.4	1	12.2	4.88	41.3	82	72.9	185	31	19
1177	MT960101	2	40.8	92.1	74	80.2	1.7	1	12.3	4.95	41.9	101	72.5	147	51	1
1178	MT960222	2	37.9	77.1	73	75.6	n.d.	3	12.9	3.88	32.1	107	43.4	431	16	47
1179	MT960225	2	40.2	76.7	74	76.4	1.5	2	11.7	3.74	33.5	82	38.7	405	19	40
1181	MT960226	2	42.8	86.5	73	77.3	n.d.	3	11.7	3.64	32.0	85	38.9	441	22	30
1182	MT960228	2	36.8	70.1	67	75.4	n.d.	3	13.5	3.88	30.5	100	37.3	480	13	51
1183	B2L20-36	6	34.8	75.4	77	78.0	n.d.	3	13.4	5.24	41.0	146	55.3	405	40	5
1184	B2L20-42	6	35.4	85.7	73	77.2	n.d.	3	13.6	4.82	37.6	127	51.8	423	29	21
1185	MT970026	2	43.7	83.5	68	77.2	1.2	1	12.7	3.94	31.9	117	37.2	468	23	28
1186	MT970107	2	38.9	77.4	74	76.9	1.2	1	12.6	3.89	32.2	109	40.5	520	20	37
1187	MT970110	2	39.7	82.0	79	78.8	n.d.	3	12.1	3.92	33.8	94	38.3	482	20	37

Table 27

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
1188	MT970116	2	42.0	86.6	70	78.6	1.1	1	12.4	3.98	33.6	102	43.4	419	34	12
1189	MT970148	2	38.3	82.0	67	79.2	2.1	2	11.7	4.64	41.9	87	60.1	420	29	21
1190	MT970155	2	37.2	76.4	73	78.2	1.9	2	12.4	5.00	40.4	111	59.8	362	34	12
1191	MT970205	2	47.3	92.3	65	77.5	1.2	2	12.8	4.00	32.9	88	34.9	508	16	47
1192	MT970228	2	39.5	88.4	73	76.8	1.4	2	12.7	3.96	31.5	109	38.0	510	19	40
1193	MT970229	2	44.3	93.1	70	78.1	2.2	2	11.7	4.18	37.1	85	40.7	562	32	16
1194	MT981004	2	39.5	78.8	77	78.7	1.4	1	11.8	4.88	43.1	67	56.2	372	30	20
1195	MT981006	2	40.0	81.0	74	78.2	1.6	1	12.1	4.97	43.7	80	59.4	318	32	16
1196	MT981009	2	39.5	75.5	74	78.7	1.5	1	12.3	4.88	42.1	100	62.2	204	37	7
1197	MT981025	2	37.3	76.8	64	75.2	1.2	1	13.6	4.12	31.0	115	38.3	499	13	51
1198	MT981029	2	38.6	79.1	69	75.3	2.0	2	12.7	3.84	31.3	84	33.0	613	8	59
1199	MT981030	2	34.1	74.8	71	76.8	1.8	2	12.4	4.20	33.8	88	45.0	462	18	43
1200	MT981039	2	35.1	69.4	69	77.8	1.5	1	13.0	4.94	40.4	108	65.8	248	26	25
1201	MT981042	2	39.1	76.0	66	77.5	1.8	2	11.9	3.81	32.4	94	42.0	392	20	37
1202	MT981055	2	36.7	78.7	72	76.9	1.7	2	12.3	3.71	30.4	87	35.3	667	15	49
1203	MT981080	2	37.1	65.6	66	75.9	1.4	2	13.7	4.74	35.8	102	62.0	336	12	54
1205	MT981083	2	42.7	77.0	68	75.5	1.3	2	12.8	3.73	29.6	90	34.9	621	11	56
1206	MT981091	2	41.3	82.3	69	77.4	1.1	2	12.6	3.92	32.4	113	39.8	579	21	36
1207	MT981116	2	43.5	89.1	75	77.1	1.3	2	13.4	4.48	33.2	135	47.6	510	32	16
1208	MT981177	2	39.7	83.7	64	75.4	1.2	2	13.0	3.91	30.1	111	36.2	553	19	40
1209	MT981180	2	36.6	76.9	73	76.1	1.3	2	14.0	4.34	32.9	128	39.5	643	12	54
1210	MT981201	2	43.6	92.5	76	77.7	1.4	1	14.1	4.60	33.9	130	45.9	585	33	15
1211	MT981210	2	38.5	80.3	73	78.9	1.4	2	13.2	5.34	42.5	162	54.1	378	24	27
1212	MT981212	2	39.8	84.7	74	78.1	1.3	2	14.2	4.36	32.4	137	39.7	476	15	49
1213	MT981213	2	42.9	80.0	71	77.1	1.2	2	13.7	4.27	32.8	128	37.5	584	17	46
1214	MT981222	2	42.8	75.7	66	75.4	1.7	1	14.1	4.14	30.4	113	39.8	569	18	43
1215	MT981238	2	45.4	93.7	75	78.4	1.4	2	14.1	5.22	38.7	135	56.6	505	22	30
1216	MT981242	2	40.4	87.3	65	76.6	1.3	1	12.6	4.25	35.3	124	35.5	606	25	26
1217	MT981248	2	42.4	80.1	71	75.2	1.1	1	14.2	4.10	30.5	128	38.6	597	18	43

Table 27

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight 6/64"	(%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)	amylase (ppm)	glucan Score	
1180	HARRINGTON MALT CHECK	2	40.0	90.0	76	80.1	1.4	1	11.8	4.60	41.0	103	58.7	274	47
1204	HARRINGTON MALT CHECK	2	39.1	95.0	78	81.4	1.5	1	11.5	5.58	51.2	119	80.1	95	46
Minima			33.9	65.6	62	75.2	1.1		11.7	3.46	29.6	53	32.2	117	8
Maxima			47.3	94.1	79	82.0	2.5		15.0	5.34	44.1	162	78.3	667	51
Means			39.6	81.0	71	77.7	1.5		12.7	4.36	35.7	107	48.9	422	25
Standard Deviations			3.0	6.9	4	1.4	0.3		0.8	0.49	4.4	21	12.1	129	10
Coefficients of Variation			7.5	8.5	5	1.9	22.3		6.3	11.26	12.4	20	24.8	30	41

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman

2000 EXPERIMENT 310100, EARLY YIELD TRIAL - BOZEMAN, MT

Table 28

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality Score	Overall Rank	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
1268	MT990010	2	35.4	72.7	67	76.9	n.d.	3	12.8	3.96	32.3	103	38.2	327	13	35
1269	MT990011	2	37.5	77.2	62	75.7	n.d.	3	14.2	4.06	29.5	105	34.0	364	4	56
1271	MT990016	2	37.1	72.3	65	77.7	1.5	1	14.0	5.39	39.9	136	74.5	280	12	41
1272	MT990022	2	40.3	79.8	66	76.6	1.2	1	14.8	4.34	31.0	158	44.2	368	13	35
1273	MT990023	2	41.0	82.7	74	78.0	1.1	1	13.7	4.52	34.2	134	46.4	129	35	1
1274	MT990026	2	39.1	73.0	69	77.8	1.5	1	13.8	5.31	39.2	137	66.3	361	11	45
1275	MT990037	2	42.8	86.5	71	78.3	1.4	1	13.5	5.65	43.1	170	71.4	448	22	11
1276	MT990041	2	36.8	75.0	68	79.7	1.3	1	12.6	5.26	43.0	116	69.4	287	32	4
1277	MT990068	2	42.7	80.1	73	79.2	1.5	1	12.9	5.33	41.9	123	61.8	275	34	3
1278	MT990074	2	37.5	75.0	71	76.5	1.4	1	14.4	5.06	35.6	141	51.3	548	13	35
1279	MT990083	2	41.2	86.6	70	75.3	n.d.	3	13.6	3.67	28.5	117	32.5	582	14	28
1280	MT990084	2	40.6	79.8	64	74.3	n.d.	3	14.9	3.82	26.9	141	30.9	608	4	56
1281	MT990086	2	37.6	74.6	64	74.3	n.d.	3	13.4	3.73	28.5	110	30.6	659	9	49
1282	MT990087	2	37.7	80.7	68	76.6	n.d.	3	12.0	3.96	32.5	97	32.9	519	14	28
1283	MT990090	2	38.8	86.9	67	77.1	1.2	1	14.7	4.98	34.8	149	51.8	445	18	15
1284	MT990098	2	37.8	79.7	69	78.4	1.2	1	12.5	4.84	40.0	124	57.7	335	35	1
1285	MT990100	2	37.3	76.9	70	76.9	n.d.	3	12.5	4.35	37.1	112	45.8	549	24	9
1286	MT990106	2	37.0	82.0	60	74.1	n.d.	3	14.5	4.17	30.4	122	33.0	602	7	54
1287	MT990107	2	39.0	88.4	60	77.8	1.6	2	14.6	5.58	40.2	137	59.9	278	21	12
1288	MT990110	2	39.5	82.4	70	74.9	n.d.	3	14.7	3.84	26.2	119	34.5	640	9	49
1289	MT990112	2	40.8	84.4	68	75.2	1.0	1	14.2	3.99	29.1	115	38.9	613	17	20
1290	MT990113	2	41.1	87.6	64	77.5	n.d.	3	14.2	5.50	39.5	138	55.8	372	14	28
1291	MT990114	2	34.7	69.1	69	73.3	n.d.	3	15.7	4.11	26.1	142	32.6	507	0	59
1292	MT990116	2	40.2	91.0	60	75.7	n.d.	3	14.5	3.89	27.9	100	31.8	650	13	35
1293	MT990118	2	35.8	78.3	70	74.5	1.2	2	14.3	4.07	29.9	112	33.6	565	8	52
1295	MT990123	2	40.1	85.1	65	77.1	n.d.	3	12.4	3.70	31.8	68	30.0	584	17	20
1296	MT990129	2	39.1	78.5	62	76.0	n.d.	3	11.9	3.53	30.8	46	34.1	629	12	41
1297	MT990132	2	37.3	79.4	65	76.2	n.d.	3	11.2	3.52	32.5	40	34.6	626	10	47
1298	MT990133	2	36.8	77.0	64	73.8	n.d.	3	13.2	3.39	26.6	49	28.4	*1326	5	55
1299	MT990136	2	38.1	74.7	64	74.9	1.1	1	12.2	3.42	29.3	40	33.2	967	14	28

Table 28

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
1300	MT990144	2	38.2	81.2	58	76.0	1.4	2	12.2	3.59	29.5	43	33.7	603	13	35
1301	MT990146	2	40.1	78.0	64	75.8	1.3	2	12.1	3.56	31.2	42	34.9	597	15	24
1302	MT990147	2	39.4	79.9	65	73.6	1.1	1	14.5	3.79	27.3	87	33.8	613	4	56
1303	MT990149	2	39.6	82.9	64	75.1	1.1	1	12.9	3.55	28.4	63	33.7	623	9	49
1304	MT990156	2	39.5	86.6	67	77.3	n.d.	3	12.6	3.99	33.4	90	35.2	548	14	28
1305	MT990158	2	43.8	89.9	80	75.3	1.1	2	14.8	3.88	26.4	130	38.5	548	20	14
1306	MT990160	2	43.1	93.2	70	75.3	n.d.	3	15.8	4.53	28.8	140	34.4	537	17	20
1307	MT990167	2	40.8	87.8	73	75.3	n.d.	3	13.5	3.99	30.4	103	34.1	511	16	23
1308	MT990170	2	38.9	91.7	60	75.0	n.d.	3	14.8	4.39	30.0	126	35.4	600	18	15
1309	MT990171	2	39.7	79.0	70	76.7	1.1	1	13.5	3.65	27.8	132	40.0	443	12	41
1310	MT990172	2	39.4	88.8	67	77.7	1.0	1	12.2	3.78	31.8	111	41.7	526	31	6
1311	MT990175	2	41.1	82.1	78	76.9	1.0	1	13.1	3.58	28.5	106	30.0	593	15	24
1312	MT990176	2	38.0	71.4	71	76.8	1.7	2	12.9	3.92	31.3	75	31.4	1023	8	52
1313	MT990182	2	36.3	74.0	70	75.7	0.9	1	13.4	3.88	29.9	97	33.8	549	11	45
1314	MT990195	2	43.6	86.9	64	76.3	1.4	1	14.6	5.17	35.6	178	57.0	436	13	35
1315	MT990212	2	38.1	87.7	66	77.0	1.2	1	14.4	4.84	34.6	111	52.0	501	25	8
1316	MT990218	2	39.0	82.8	58	75.8	1.2	1	14.9	4.08	27.3	129	40.0	509	15	24
1317	MT990223	2	37.7	66.9	71	76.5	1.2	1	13.0	3.74	29.4	118	38.1	485	18	15
1319	MT990233	2	41.1	80.0	76	77.5	1.4	1	13.8	5.29	40.2	124	69.0	490	21	12
1320	MT990235	2	36.8	76.3	67	78.4	1.8	1	13.6	5.06	39.6	113	53.9	360	24	9
1321	MT990237	2	38.1	83.6	68	79.0	1.9	1	14.0	5.27	39.3	126	55.3	407	18	15
1322	MT990242	2	41.5	84.0	70	76.0	1.3	1	13.0	3.97	31.5	95	38.1	494	15	24
1323	MT990244	2	42.4	83.9	72	75.5	1.3	1	13.7	3.87	29.5	116	31.1	632	14	28
1324	MT990246	2	41.0	77.8	62	76.8	1.1	1	13.7	3.92	29.2	88	36.1	612	10	47
1325	MT990248	2	42.6	82.7	71	77.0	1.3	2	12.9	3.63	29.4	112	26.6	607	18	15
1326	MT990249	2	44.6	85.2	71	77.0	1.2	1	13.8	4.29	31.4	98	33.6	605	14	28
1327	SK76333	2	35.8	65.6	73	77.1	1.3	1	13.9	5.26	38.0	119	59.8	374	12	41
1328	MT960099	2	37.0	68.6	70	78.9	1.4	1	11.8	4.69	42.4	96	67.1	447	32	4
1329	MT960101	2	36.8	71.6	80	78.9	1.4	1	12.3	4.85	40.6	92	66.4	328	28	7

Table 28

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight 6/64"	(mg)	Color (%)	Extract (Agtron)	Wort Color (%)	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score
1270	HARRINGTON MALT CHECK	2	40.0	95.9	74	80.9	1.4	1	11.6	5.23	48.8	125	70.8	75	39
1294	HARRINGTON MALT CHECK	2	39.7	95.1	78	81.0	1.4	1	11.8	5.53	49.5	124	68.2	68	39
1318	HARRINGTON MALT CHECK	2	40.2	95.8	77	79.4	1.5	1	11.3	5.45	50.5	124	74.2	82	45
Minima			34.7	65.6	58	73.3	0.9		11.2	3.39	26.1	40	26.6	129	0
Maxima			44.6	93.2	80	79.7	1.9		15.8	5.65	43.1	178	74.5	1023	35
Means			39.2	80.5	68	76.5	1.3		13.6	4.29	32.7	109	43.0	512	16
Standard Deviations			2.3	6.4	5	1.5	0.2		1.0	0.66	5.0	31	13.3	152	8
Coefficients of Variation			5.8	7.9	7	1.9	16.9		7.6	15.44	15.3	29	30.9	30	50

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman

2000 IRRIGATED INTRASTATE EXPERIMENT 221900 - CONRAD, MT

Table 29

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
1874	SK 76333	2	38.8	85.8	77	80.2	1.2	1	11.3	4.42	40.3	94	62.3	417	36	5
1875	MTLB 30	2	40.8	89.0	73	79.7	1.1	1	11.9	3.93	34.4	96	54.6	659	34	6
1876	CI 15773	6	33.1	65.3	85	79.4	n.d.	3	11.0	4.02	39.1	111	46.3	478	29	18
1877	2B914947	2	40.8	91.4	74	78.9	1.2	1	12.3	3.99	33.5	98	52.2	697	33	9
1878	2B965038	2	42.9	93.6	78	80.4	1.8	2	12.7	*5.20	41.3	122	*83.0	339	38	3
1879	2B965119	2	42.0	94.2	77	79.3	1.2	1	11.7	4.25	36.4	99	61.7	650	30	17
1880	6B932978	6	33.0	*60.9	87	77.9	n.d.	3	12.3	4.19	36.3	136	53.7	732	26	26
1881	AC99 11	2	41.1	85.2	73	79.8	1.3	1	10.3	3.78	38.1	99	50.6	414	34	6
1882	PI601736	2	37.7	81.9	78	78.6	n.d.	3	11.4	3.51	31.7	80	34.1	718	14	58
1883	C 22	2	39.4	89.0	80	79.4	n.d.	3	10.2	3.38	33.2	69	37.5	270	29	18
1884	C 32	2	40.5	87.9	76	78.4	n.d.	3	11.9	3.33	28.5	82	30.3	824	21	46
1885	C 37	2	39.5	89.7	73	78.6	n.d.	3	11.8	3.67	31.1	93	34.0	601	19	52
1886	MT9101189	2	42.9	87.6	80	80.7	1.1	1	11.2	4.03	38.3	100	56.2	611	31	15
1887	MT940214	2	43.2	89.2	76	79.4	1.0	1	12.9	4.00	32.7	84	44.1	830	29	18
1888	MT950186	2	42.8	86.2	66	80.8	n.d.	3	9.7	3.54	37.9	*38	37.8	616	24	34
1889	MTLB 5	2	40.5	86.8	74	80.3	1.2	1	11.6	3.80	35.8	98	48.8	711	37	4
1890	MTLB 6	2	40.4	91.7	75	79.8	1.2	1	11.9	3.93	35.7	108	49.0	858	39	2
1892	MTLB 13	2	40.4	82.2	80	81.2	1.3	2	10.5	4.12	42.2	83	52.0	481	34	6
1893	MT960099	2	40.4	80.2	72	79.8	1.2	1	11.4	4.33	38.7	94	58.2	781	23	39
1894	MT960100	2	40.2	82.5	71	79.7	1.3	1	11.4	4.28	39.2	83	65.5	452	23	39
1895	MT960101	2	39.3	81.0	84	80.7	1.2	1	11.7	4.21	36.4	94	59.6	411	21	46
1896	MT960222	2	39.5	79.3	84	78.2	n.d.	3	10.2	3.51	36.3	82	40.8	629	23	39
1897	MT960225	2	44.3	90.4	79	77.8	n.d.	3	12.2	3.55	30.5	88	35.1	687	24	34
1898	MT960226	2	42.1	88.4	82	78.2	n.d.	3	10.5	3.43	34.0	78	35.6	560	26	26
1899	MT960228	2	44.8	92.1	74	78.1	n.d.	3	12.0	3.60	31.2	97	34.4	674	28	23
1900	B2L20-36	6	33.2	66.8	84	78.6	n.d.	3	11.6	4.30	39.5	120	46.4	566	26	26
1901	B2L20-42	6	33.4	77.8	88	76.6	n.d.	3	11.8	3.99	34.1	113	42.1	621	24	34
1902	MT970026	2	44.5	89.6	75	78.6	1.6	2	11.9	3.67	32.5	95	32.8	835	27	25
1903	MT970107	2	41.0	84.9	79	78.6	1.3	2	10.5	3.45	34.6	82	38.2	682	23	39
1904	MT970110	2	37.8	69.8	86	78.6	n.d.	3	10.5	3.56	36.1	79	35.3	673	18	55

Table 29

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
1905	MT970116	2	44.5	91.4	80	80.1	1.3	1	10.7	3.67	37.3	80	38.8	549	33	9
1906	MT970148	2	39.0	84.8	76	78.8	1.5	2	11.9	4.26	36.0	91	48.1	696	24	34
1907	MT970155	2	39.6	83.3	84	79.9	n.d.	3	10.7	4.10	41.8	90	50.7	375	28	23
1908	MT970205	2	46.4	91.1	74	79.4	1.9	2	10.3	3.59	35.3	65	33.2	628	25	30
1909	MT970228	2	39.9	92.7	81	77.5	1.8	2	11.5	3.56	32.0	105	34.8	687	22	43
1910	MT970229	2	43.5	92.3	76	77.2	n.d.	3	12.1	3.50	30.4	85	34.4	893	20	50
1911	MT981004	2	39.0	79.8	82	78.3	1.5	1	11.8	3.93	34.6	73	45.5	678	25	30
1912	MT981006	2	40.7	89.1	78	78.7	n.d.	3	11.3	4.08	38.7	84	51.5	476	25	30
1913	MT981009	2	41.7	83.5	79	78.7	n.d.	3	11.9	4.06	35.6	91	50.6	444	22	43
1914	MT981025	2	41.3	92.3	68	77.4	1.5	2	12.3	3.38	28.0	100	33.8	726	24	34
1916	MT981029	2	43.0	88.0	71	77.6	n.d.	3	12.0	3.56	30.3	89	32.2	746	18	55
1917	MT981030	2	36.5	86.0	75	78.0	n.d.	3	11.2	3.53	31.7	73	36.9	687	21	46
1918	MT981039	2	37.9	84.9	80	80.7	n.d.	3	10.1	3.90	41.5	80	53.8	254	29	18
1919	MT981042	2	40.7	80.6	68	78.9	n.d.	3	10.1	3.24	32.6	78	35.1	631	22	43
1920	MT981055	2	38.0	81.6	77	76.7	1.3	2	12.6	3.54	28.1	97	33.5	746	10	59
1921	MT981080	2	40.5	85.8	69	78.3	n.d.	3	12.0	4.08	36.6	92	52.1	418	25	30
1922	MT981083	2	41.8	71.3	78	77.1	1.4	2	11.7	3.29	29.9	70	28.9	702	15	57
1923	MT981091	2	44.5	89.3	75	79.1	1.2	1	11.7	3.66	32.0	107	35.8	722	32	13
1924	MT981116	2	42.4	87.9	81	78.0	1.1	1	11.8	3.85	34.0	112	38.2	723	31	15
1925	MT981177	2	40.8	89.5	71	77.7	1.1	1	11.3	3.38	30.5	84	33.6	774	19	52
1926	MT981180	2	37.8	81.6	80	78.4	1.1	1	11.8	3.75	32.5	98	34.9	808	20	50
1927	MT981201	2	41.3	92.4	84	79.2	1.2	1	11.8	3.99	34.7	109	38.3	837	33	9
1928	MT981210	2	42.3	88.5	83	81.5	1.3	1	10.6	4.69	45.6	124	49.8	391	56	1
1929	MT981212	2	42.6	91.0	82	78.9	1.4	2	11.6	3.96	35.2	106	36.0	747	33	9
1930	MT981213	2	43.2	84.4	80	79.2	1.3	1	11.3	4.13	37.7	105	36.4	701	29	18
1931	MT981222	2	43.8	84.2	74	77.8	n.d.	3	12.0	3.74	32.8	88	38.0	667	19	52
1932	MT981238	2	43.1	89.7	82	80.3	1.2	1	11.2	4.28	40.2	93	57.2	660	32	13
1933	MT981242	2	40.4	88.3	76	78.5	1.3	2	10.9	3.67	34.6	109	34.5	673	26	26
1934	MT981248	2	45.4	90.4	81	77.7	1.3	2	11.5	3.60	32.1	85	34.3	706	21	46

Table 29

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality				
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T	DP	amylase (°ASBC)	glucan (20°DU) (ppm)	Quality
1891	HARRINGTON MALT CHECK	2	39.7	95.0	77	81.8	1.4	1	11.5	5.30	48.4	115	66.1	218	42
1915	HARRINGTON MALT CHECK	2	39.8	94.6	78	81.1	1.6	1	11.4	5.52	51.4	123	73.6	90	46
Minima			33.0	65.3	66	76.6	1.0		9.7	3.24	28.0	65	28.9	254	10
Maxima			46.4	94.2	88	81.5	1.9		12.9	4.69	45.6	136	65.5	893	56
Means			40.7	85.8	78	78.9	1.3		11.4	3.82	35.1	93	42.9	631	26
Standard Deviations			2.9	6.3	5	1.1	0.2		0.7	0.33	3.8	15	9.6	151	7
Coefficients of Variation			7.2	7.3	6	1.4	16.3		6.3	8.65	10.9	16	22.4	24	28

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman

2000 EXPERIMENT 371900, IRRIGATED MALTING BARLEYS OFFSTATION - CONRAD, MT

Table 30

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort		Alpha-	Beta-	Quality	Overall		
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank
2054	PI1591823	2	37.5	68.8	82	77.6	1.1	1	13.1	4.20	33.4	140	45.9	733	18	14
2055	SK 76333	2	37.8	84.5	75	79.1	1.1	1	12.2	4.53	37.5	127	56.2	415	30	6
2056	PI601736	2	38.5	84.9	73	78.0	n.d.	3	12.1	3.71	31.6	100	41.3	495	27	10
2057	PI604233	2	41.0	89.1	74	78.2	n.d.	3	12.4	3.68	30.2	91	41.5	425	28	8
2058	C37	2	38.0	84.5	71	78.3	n.d.	3	12.2	3.89	33.0	106	41.8	403	25	12
2059	BA 1202	2	42.2	91.1	78	78.7	1.4	2	12.7	4.19	35.4	114	51.1	495	31	5
2061	2B14947	2	36.7	76.6	82	79.7	1.3	1	12.0	4.67	39.3	150	71.4	236	29	7
2062	CI 15478	2	37.6	64.4	80	78.4	1.2	1	12.4	4.44	37.0	123	52.1	555	34	3
2063	MT910189	2	42.7	87.0	81	79.4	1.0	1	12.1	4.34	36.7	141	56.3	429	27	10
2064	MTLB 05	2	39.0	83.2	70	78.3	1.1	1	12.9	4.16	34.3	135	56.4	514	17	15
2065	CI 15773	2	33.4	59.3	85	77.7	1.4	2	12.7	4.38	35.2	166	49.3	356	13	16
2066	PI592758	6	35.3	77.1	84	77.4	n.d.	3	12.0	4.60	38.6	162	53.8	404	38	2
2067	MN 52	6	35.9	71.8	79	78.6	1.6	2	12.2	4.92	41.4	165	56.0	354	43	1
2068	PI564743	6	36.1	83.6	82	78.8	1.8	2	13.6	5.66	42.3	174	66.2	327	28	8
2069	B2L20-36	6	32.7	56.0	85	77.0	1.8	2	13.3	4.71	37.9	156	53.9	331	32	4
2070	BL20-42	6	34.1	80.4	85	77.4	n.d.	3	12.6	4.28	36.3	130	48.8	509	22	13
2060	HARRINGTON MALT CHECK	2	40.3	94.9	75	80.9	1.4	1	12.2	5.43	48.0	142	69.3	93	38	
Minima			32.7	56.0	70	77.0	1.0		12.0	3.68	30.2	91	41.3	236	13	
Maxima			42.7	91.1	85	79.7	1.8		13.6	5.66	42.3	174	71.4	733	43	
Means			37.4	77.6	79	78.3	1.3		12.5	4.40	36.3	136	52.6	436	28	
Standard Deviations			2.9	10.7	5	0.8	0.3		0.5	0.48	3.3	25	8.3	115	8	
Coefficients of Variation			7.7	13.8	6	1.0	21.5		3.9	10.97	9.1	19	15.8	26	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman, MT

2000 EXPERIMENT 370400, IRRIGATED MALTING BARLEYS OFFSTATION - SIDNEY, MT

Table 31

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP (°ASBC)	Alpha-	Beta-	Quality Score	Overall Rank	
			Weight 6/64"	(mg)	(%)	(Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)		Protein (%)	(%)	amylase (20°DU)	glucan (ppm)	
2071	PI591823	2	42.2	86.4	57	78.3	1.5	1	15.0	5.49	38.9	150	63.0	529	17	13
2072	SK 76333	2	37.6	78.9	54	78.9	1.6	1	13.6	5.86	44.3	148	72.1	303	14	14
2073	PI601736	2	37.5	78.4	41	77.8	2.3	2	14.4	4.93	34.2	115	51.5	281	22	9
2074	PI604233	2	38.3	87.1	46	78.0	n.d.	3	13.6	4.78	36.3	98	50.3	161	27	5
2075	C37	2	39.7	85.6	43	78.5	2.2	2	13.1	4.84	39.3	116	51.6	240	36	1
2076	BA 1202	2	40.3	86.2	48	78.7	1.8	1	13.7	5.50	41.2	118	63.3	290	31	3
2078	2B914947	2	37.6	76.1	46	79.8	2.4	1	13.9	6.01	46.4	151	79.4	177	12	15
2079	CI 15478	2	36.4	60.0	46	78.2	2.0	1	15.1	5.95	40.3	137	65.7	340	18	11
2080	MT910189	2	41.7	87.2	51	79.1	1.5	1	14.2	5.56	40.1	154	70.3	432	21	10
2081	MTLB 05	2	38.0	84.2	56	79.2	1.8	1	13.6	5.50	42.4	132	76.8	348	18	11
2082	CI 15773	2	34.1	82.9	54	77.6	1.8	1	14.2	6.04	44.9	190	67.4	189	10	16
2083	PI592758	6	36.6	88.8	50	78.5	1.9	1	12.6	5.78	47.7	172	65.4	328	24	7
2084	MN 52	6	34.7	72.8	52	79.1	2.1	1	13.2	6.36	51.3	158	66.0	373	29	4
2085	PI564743	6	33.9	77.7	44	79.0	2.3	1	13.9	6.74	51.6	173	74.1	307	24	7
2086	B2L20-36	6	33.3	75.8	46	77.7	2.0	1	14.3	5.96	43.3	157	60.5	324	25	6
2087	B2L20-42	6	33.2	86.2	43	77.2	2.0	1	13.5	5.34	40.6	134	58.0	339	33	2
2077	HARRINGTON MALT CHECK	2	41.0	94.6	79	81.0	1.5	1	11.5	5.47	50.9	128	70.8	85	48	
Minima			33.2	60.0	41	77.2	1.5		12.6	4.78	34.2	98	50.3	161	10	
Maxima			42.2	88.8	57	79.8	2.4		15.1	6.74	51.6	190	79.4	529	36	
Means			37.2	80.9	49	78.5	1.9		13.9	5.66	42.7	144	64.7	310	23	
Standard Deviations			2.9	7.5	5	0.7	0.3		0.6	0.54	4.9	25	8.8	93	8	
Coefficients of Variation			7.7	9.2	10	0.9	14.5		4.6	9.48	11.4	17	13.6	30	33	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman, MT

2000 PRELIMINARY YIELD TRIAL - BOZEMAN, MT

Table 32

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein			(°ASBC)	(20°DU)	amylase	glucan	
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)	(°)	(ppm)			
2481	210	2	40.2	89.8	69	77.7	1.4	1	12.9	3.56	28.6	74	38.4	676	18	49
2482	211	2	43.3	78.4	63	76.9	1.6	1	13.4	3.30	26.3	89	33.0	682	12	59
2483	212	2	40.8	89.1	61	78.0	1.2	1	13.3	3.88	30.1	106	50.6	608	22	36
2484	213	2	42.0	83.8	70	78.7	1.3	1	12.6	4.04	33.1	104	54.0	446	23	30
2485	214	2	40.4	88.3	70	77.6	1.6	1	14.5	4.19	30.8	107	42.6	870	20	42
2486	215	2	39.2	90.5	70	78.0	1.2	1	13.7	3.73	28.8	107	40.8	739	20	42
2487	216	2	40.2	81.7	72	80.3	1.5	1	13.0	4.63	38.3	118	72.3	140	39	4
2488	217	2	42.2	87.2	72	81.0	1.5	1	12.4	4.48	37.8	100	63.9	261	41	2
2489	218	2	42.1	88.1	72	80.3	1.5	1	13.1	4.65	36.2	115	73.3	338	36	7
2490	219	2	41.4	90.4	73	80.0	1.6	1	14.5	4.94	36.3	125	72.4	376	32	9
2491	220	2	39.1	75.8	77	76.3	0.9	1	13.2	3.65	29.0	115	40.8	476	23	30
2492	221	2	40.8	79.5	67	78.8	1.7	1	14.6	5.03	35.7	125	67.5	373	24	28
2493	222	2	39.6	91.5	70	78.7	1.9	1	13.4	4.43	34.7	112	46.8	562	39	4
2494	223	2	39.6	82.6	69	78.4	1.2	1	13.9	4.57	34.0	125	59.6	546	22	36
2496	224	2	40.6	90.4	75	79.1	1.2	1	11.7	3.45	31.0	98	41.1	385	36	7
2497	225	2	41.9	90.1	68	76.5	1.1	1	14.4	3.94	28.5	137	38.8	565	19	47
2498	226	2	38.1	91.2	75	78.1	1.0	1	13.0	3.74	29.4	99	39.3	356	26	23
2499	227	2	38.4	69.9	70	77.8	1.4	1	13.3	4.01	30.8	135	42.2	377	20	42
2500	228	2	39.9	89.2	72	79.1	1.0	1	12.7	3.86	31.5	118	36.1	261	30	12
2501	229	2	38.7	75.5	75	77.3	1.1	1	14.2	4.81	35.5	145	38.4	380	15	51
2502	230	2	47.7	94.4	70	77.1	1.4	1	15.6	5.45	36.5	112	47.2	607	29	16
2503	231	2	46.2	88.6	69	75.6	1.4	1	15.6	5.21	34.4	165	47.6	471	20	42
2504	232	2	*50.2	97.5	60	76.5	1.6	1	15.4	5.18	35.4	154	54.1	114	26	23
2505	233	2	43.7	89.4	64	75.7	1.8	1	15.5	5.69	37.8	121	47.1	465	27	22
2506	234	2	44.9	91.0	67	73.6	1.4	2	14.2	4.03	29.8	41	32.4	888	11	62
2507	235	2	44.6	93.4	60	76.1	1.2	1	13.5	3.72	28.7	59	35.0	699	12	59
2508	236	2	43.1	82.1	60	74.8	1.4	1	14.8	4.53	31.7	82	40.4	510	21	40
2509	237	2	37.5	81.6	73	77.7	1.4	1	13.7	4.58	34.9	116	47.7	585	23	30
2510	238	2	42.6	91.3	74	79.0	1.5	1	13.8	4.93	37.3	142	57.2	551	23	30
2511	239	2	43.2	90.2	75	78.4	1.3	1	13.6	4.71	35.4	139	52.9	485	31	10

Table 32

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
2512	240	2	39.2	79.4	74	78.1	1.3	1	14.1	4.77	36.0	137	52.4	522	23	30
2513	241	2	38.9	81.4	72	79.3	1.5	1	13.4	5.18	40.5	129	59.3	535	28	19
2514	242	2	44.1	91.6	80	77.7	1.1	1	13.3	3.88	30.9	106	37.7	636	25	26
2515	243	2	42.4	93.6	73	79.3	2.0	1	13.8	5.46	42.0	130	55.5	556	28	19
2517	244	2	40.8	78.3	74	78.4	1.3	1	13.5	4.67	37.1	123	49.8	596	31	10
2518	245	2	42.2	92.1	72	77.9	1.4	1	14.6	5.12	36.2	141	50.7	584	19	47
2519	246	2	41.5	86.0	69	79.9	1.5	1	12.7	4.91	40.3	134	56.3	474	37	6
2520	247	2	41.1	91.5	71	79.1	1.7	1	13.7	5.08	39.9	131	57.0	516	26	23
2521	248	2	41.5	89.9	74	79.9	1.4	1	12.8	4.96	40.9	127	57.5	439	40	3
2522	249	2	44.9	89.1	69	78.7	1.3	1	13.7	4.37	33.6	98	39.4	558	22	36
2523	250	2	39.5	81.2	67	78.4	1.3	1	13.4	4.30	34.5	107	45.9	592	24	28
2524	251	2	36.2	76.5	68	78.2	1.2	1	12.8	4.61	37.5	111	50.7	533	29	16
2525	252	2	36.7	82.1	72	78.5	1.4	1	14.1	4.99	36.9	144	57.1	490	13	54
2526	253	2	35.3	67.4	78	78.8	1.3	1	12.6	4.50	38.1	124	54.2	458	29	16
2527	254	2	37.5	84.6	62	77.0	1.2	1	14.6	4.36	31.1	123	50.8	585	13	54
2528	255	2	36.7	79.7	73	78.1	1.3	1	13.1	4.55	35.2	130	55.9	548	25	26
2529	256	2	39.9	90.0	71	77.4	1.3	1	14.2	4.56	33.1	121	59.7	586	23	30
2530	257	2	39.9	85.3	69	77.4	1.3	2	12.5	3.36	28.6	82	38.0	576	15	51
2531	258	2	39.2	84.3	72	75.8	1.4	1	12.5	3.57	30.3	49	39.8	547	13	54
2532	259	2	40.1	81.6	60	77.5	1.2	1	13.1	3.98	31.6	62	39.2	356	15	51
2533	260	2	41.4	92.2	58	78.0	1.2	1	12.5	4.03	34.2	56	40.1	246	30	12
2534	261	2	38.1	91.6	66	77.7	1.2	1	13.1	3.63	27.7	45	38.8	417	18	49
2535	262	2	43.0	91.1	69	78.8	1.3	1	12.6	4.17	35.0	44	49.0	547	28	19
2536	263	2	42.8	90.9	75	80.6	1.4	1	13.0	5.00	41.6	100	62.4	244	43	1
2538	264	2	37.8	85.0	73	78.0	1.5	2	12.9	3.86	31.5	101	37.0	464	21	40
2539	265	2	39.5	73.4	75	79.5	1.3	1	13.3	4.71	37.5	114	63.8	425	30	12
2540	266	2	40.1	79.7	78	79.3	1.2	1	13.2	5.14	41.5	109	59.1	255	30	12
2541	267	2	40.4	85.4	62	76.3	1.1	1	14.8	4.33	30.0	138	20.7	486	13	54
2542	268	2	42.1	89.9	73	75.7	n.d.	3	14.1	3.84	27.7	60	35.6	654	12	59
2543	269	2	40.8	84.5	72	76.1	1.1	1	14.5	4.23	30.3	117	40.6	592	20	42

Table 32

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-			
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(%ASBC)	(20°DU)	amylase (ppm)	glucan	Quality Score	Overall Rank
2544	270	2	38.7	81.4	68	78.8	1.3	1	13.8	4.61	35.4	125	63.9	405	22	36
2545	271	2	37.2	80.7	70	76.8	1.9	2	12.6	3.44	28.5	86	45.2	862	13	54
2495	HARRINGTON MALT CHECK	2	39.7	95.4	76	80.9	1.4	1	11.8	4.99	43.6	121	67.5	218	48	
2516	HARRINGTON MALT CHECK	2	39.5	94.5	75	81.1	1.4	1	11.6	5.05	46.0	120	61.7	95	50	
2537	HARRINGTON MALT CHECK	2	39.8	95.0	75	81.4	1.3	1	11.9	5.20	47.4	123	60.2	82	46	
Minima			35.3	67.4	58	73.6	0.9		11.7	3.30	26.3	41	20.7	114	11	
Maxima			47.7	97.5	80	81.0	2.0		15.6	5.69	42.0	165	73.3	888	43	
Means			40.7	85.7	70	78.0	1.4		13.6	4.41	33.9	110	48.7	501	24	
Standard Deviations			2.5	6.3	5	1.5	0.2		0.9	0.59	4.1	28	11.0	157	8	
Coefficients of Variation			6.1	7.3	7	1.9	16.3		6.4	13.32	12.0	26	22.7	31	33	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman, MT

2000 PRELIMINARY YIELD TRIAL - BOZEMAN, MT

Table 33

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)			
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)			Score	Rank	
2546	272	2	39.8	87.7	67	76.5	1.6	2	12.5	3.44	28.5	59	44.7	871	23	45
2547	273	2	41.1	85.7	71	77.9	1.3	2	12.9	3.65	29.3	77	38.6	742	17	58
2548	274	2	41.2	90.5	68	76.9	1.8	2	12.7	3.57	29.0	38	41.7	1083	22	48
2549	275	2	39.9	90.7	61	75.6	2.2	2	12.8	3.48	27.3	70	37.4	1041	17	58
2550	276	2	38.9	*68.2	73	76.1	1.3	1	13.7	3.75	28.0	86	37.0	687	8	65
2551	277	2	38.3	69.8	73	77.6	2.2	1	13.2	5.65	44.1	85	37.9	133	28	30
2552	278	2	37.7	88.3	65	78.3	1.9	1	14.2	5.18	37.9	99	38.6	207	23	45
2553	279	2	41.1	85.7	73	77.9	2.2	1	12.8	5.54	44.4	110	84.4	182	32	14
2554	280	2	38.6	87.6	68	76.1	2.9	1	14.6	6.34	46.8	109	40.0	235	21	52
2555	281	2	37.0	88.9	69	79.5	2.2	1	14.0	6.37	47.8	96	37.0	272	23	45
2556	282	2	36.8	82.0	70	78.9	1.9	1	13.4	5.54	43.7	95	37.8	70	26	37
2557	283	2	38.6	90.8	74	78.1	2.3	1	14.6	5.81	40.0	120	37.8	187	30	23
2559	284	2	44.7	90.8	75	78.2	2.3	1	13.5	5.89	45.5	111	56.1	150	39	6
2560	285	2	43.1	91.7	74	79.9	1.6	1	14.2	5.26	38.1	121	62.0	170	32	14
2561	286	2	42.1	91.7	74	78.5	1.9	1	12.6	4.02	33.6	115	39.5	625	32	14
2562	287	2	40.7	85.8	74	76.7	2.1	1	12.9	5.43	43.2	104	40.7	141	40	4
2563	288	2	41.4	85.7	75	76.4	2.5	1	12.9	5.42	42.5	117	65.7	88	36	10
2564	289	2	41.5	83.3	73	77.4	2.0	1	13.5	5.53	41.7	120	61.2	184	29	29
2565	290	2	43.4	89.6	69	77.9	2.4	1	14.1	5.55	40.1	121	61.7	147	32	14
2566	291	2	41.8	85.8	77	76.7	2.3	1	12.9	5.15	41.2	118	64.8	226	32	14
2567	292	2	41.9	91.3	75	78.0	2.2	1	13.3	5.39	42.2	109	63.3	253	35	13
2568	293	2	42.0	89.9	73	77.2	2.2	1	13.2	5.67	44.1	112	65.1	134	37	8
2569	294	2	38.3	79.6	75	77.3	2.0	1	13.9	5.02	38.2	151	73.4	136	18	55
2570	295	2	40.5	87.3	70	78.1	2.3	1	12.9	5.40	42.8	114	42.3	103	47	2
2571	296	2	42.1	84.0	75	77.9	2.3	1	12.8	5.17	41.4	108	57.2	154	27	33
2572	297	2	40.9	82.5	75	77.7	2.3	1	12.5	5.59	47.1	105	66.2	153	26	37
2573	298	2	44.7	91.0	79	77.3	2.0	1	12.6	4.54	37.4	95	59.3	307	24	43
2574	299	2	43.3	92.0	75	78.9	2.3	1	12.5	5.44	45.5	84	85.7	109	36	10
2575	300	2	42.3	89.8	71	77.6	2.4	1	13.1	5.62	43.2	84	55.6	117	30	23
2576	301	2	45.5	93.0	74	78.4	2.4	1	12.6	5.49	45.2	86	53.1	105	40	4

Table 33

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)	Score	Rank	
2577	302	2	42.6	85.0	80	79.1	2.5	1	13.9	5.53	41.3	113	68.5	249	32	14
2578	303	2	41.0	83.5	73	77.7	2.0	1	14.3	4.70	33.6	98	46.8	209	27	33
2579	304	2	44.9	91.0	72	78.1	2.2	1	13.4	5.71	44.7	122	48.0	82	50	1
2581	305	2	42.3	81.4	70	80.4	2.8	2	13.6	5.63	44.4	147	79.8	213	24	43
2582	306	2	41.8	90.1	68	79.2	2.7	2	13.8	5.54	41.7	145	58.6	348	22	48
2583	307	2	45.2	91.5	72	81.4	3.2	2	13.9	6.33	46.7	141	68.0	329	21	52
2584	308	2	42.4	89.0	68	79.4	2.8	2	14.3	6.11	44.1	150	59.8	380	18	55
2585	309	2	42.1	86.8	70	76.8	2.6	2	14.3	4.35	30.9	119	35.0	818	16	61
2586	310	2	43.5	83.5	75	78.2	2.5	2	13.1	4.32	34.1	111	39.1	621	26	37
2587	311	2	42.8	84.9	74	77.8	2.5	2	13.2	4.06	31.6	107	33.6	671	15	62
2588	312	2	43.3	91.0	73	80.7	3.1	1	13.9	5.94	45.6	139	54.8	222	38	7
2589	313	2	41.8	91.7	70	80.9	3.1	2	12.9	5.90	47.2	133	66.3	88	36	10
2590	314	2	39.6	93.7	70	79.2	2.5	2	12.9	3.91	31.8	119	37.9	421	28	30
2591	315	2	43.1	78.9	71	81.3	2.3	1	12.5	5.73	48.7	123	62.7	84	44	3
2592	316	2	44.2	93.5	67	78.3	2.2	1	14.0	4.34	32.4	129	37.0	381	27	33
2593	317	2	44.2	89.1	71	80.1	2.7	1	13.3	5.37	42.7	118	55.9	549	37	8
2594	318	2	43.5	91.9	74	79.2	2.5	1	12.7	4.23	35.6	136	42.4	514	32	14
2595	319	2	43.6	92.5	77	77.4	2.2	1	13.2	3.88	29.9	118	48.2	559	31	22
2596	320	2	43.4	98.5	70	77.8	2.8	2	12.5	3.89	33.1	111	35.4	635	32	14
2597	321	2	40.7	92.0	69	77.4	2.3	1	14.5	5.11	36.1	134	54.4	529	22	48
2598	322	2	40.7	91.6	72	76.9	2.0	1	15.4	5.00	34.2	138	52.9	333	26	37
2599	323	2	43.2	90.0	75	76.8	2.5	1	13.4	3.91	30.4	109	39.5	774	25	42
2600	324	2	43.0	89.8	69	78.4	2.7	1	13.2	4.67	36.5	104	59.2	532	30	23
2602	325	2	41.3	80.0	76	79.0	3.3	2	13.2	4.71	37.7	116	60.8	508	28	30
2603	326	2	40.2	81.6	67	76.7	2.5	1	13.5	3.99	31.0	127	39.9	557	17	58
2604	327	2	43.5	91.0	68	77.2	2.0	1	14.7	5.33	37.7	130	68.9	139	26	37
2605	328	2	39.9	80.8	79	79.4	2.9	2	13.5	5.19	41.4	128	63.8	273	30	23
2606	329	2	39.4	80.5	71	78.9	2.6	1	13.4	4.63	35.9	129	60.7	379	27	33
2607	330	2	37.9	70.4	74	76.8	2.6	1	15.6	5.01	33.9	165	61.8	442	9	64
2608	331	2	35.9	75.3	70	75.8	3.4	1	15.7	4.64	30.8	159	53.5	458	13	63

Table 33

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	Alpha-	Beta-	Overall			
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein	(°ASBC)	DP (20°DU)	amylase (ppm)			
2609	332	2	39.8	81.2	73	78.9	2.8	1	13.8	4.55	35.4	131	57.6	421	19	54
2610	333	2	41.3	83.0	66	78.8	3.1	1	12.8	4.62	38.5	73	77.8	496	22	48
2611	334	2	41.7	85.1	64	77.8	3.4	1	12.8	3.86	32.5	61	39.6	570	18	55
2612	335	2	42.4	92.2	70	78.9	3.2	1	12.3	3.84	32.7	47	40.0	739	30	23
2613	336	2	39.4	89.3	71	79.4	2.3	1	13.3	4.73	37.4	87	45.1	637	30	23
2558	HARRINGTON MALT CHECK	2	40.4	95.4	74	78.9	2.2	1	12.2	5.79	50.8	106	67.1	173	35	
2580	HARRINGTON MALT CHECK	2	39.8	94.7	73	81.1	2.1	1	12.0	5.10	45.1	113	68.8	242	47	
2601	HARRINGTON MALT CHECK	2	39.7	94.5	75	81.3	2.0	1	12.4	5.31	46.5	123	69.9	96	46	
Minima			35.9	69.8	61	75.6	1.3		12.3	3.44	27.3	38	33.6	70	8	
Maxima			45.5	98.5	80	81.4	3.4		15.7	6.37	48.7	165	85.7	1083	50	
Means			41.5	87.1	72	78.1	2.4		13.4	4.97	38.5	111	52.9	372	28	
Standard Deviations			2.2	5.5	4	1.3	0.5		0.8	0.79	5.9	26	13.5	252	8	
Coefficients of Variation			5.2	6.3	5	1.7	19.3		5.8	15.84	15.4	23	25.5	68	31	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman, MT

2000 PRELIMINARY YIELD TRIAL - BOZEMAN, MT

Table 34

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2614	337	2	43.4	90.9	73	80.3	3.3	1	12.7	5.10	41.0	139	61.0	456	36	1
2615	338	2	40.1	84.8	76	78.5	1.3	1	13.1	4.68	36.8	151	57.8	523	22	28
2616	339	2	41.4	82.7	76	79.6	1.3	1	13.4	5.13	38.6	143	61.2	451	21	33
2617	340	2	43.0	87.9	78	78.4	1.4	1	13.8	4.84	35.2	144	52.4	210	28	13
2618	341	2	44.8	89.9	80	79.5	1.4	1	13.2	4.77	37.4	111	59.4	568	36	1
2619	342	2	40.9	84.0	76	77.1	n.d.	3	12.8	3.75	30.4	103	37.8	707	17	48
2620	343	2	41.7	88.7	66	76.0	2.7	2	13.9	3.91	29.2	105	40.1	495	19	38
2621	344	2	38.7	80.4	80	76.9	1.4	1	12.3	3.58	30.6	93	35.8	567	18	44
2622	345	2	39.9	84.3	74	78.1	2.3	2	12.6	3.94	31.5	75	42.7	447	19	38
2623	346	2	40.0	82.4	72	76.5	1.9	2	14.1	4.36	31.9	107	42.1	385	14	53
2624	347	2	40.7	84.8	70	76.3	2.1	2	13.9	4.23	31.1	123	43.1	560	19	38
2625	348	2	44.5	91.5	72	78.2	2.1	2	12.3	4.07	34.5	76	43.8	430	32	4
2626	349	2	40.8	87.4	71	76.5	2.0	1	12.3	3.52	30.7	84	36.0	954	23	26
2627	350	2	36.4	70.7	79	75.9	n.d.	3	12.4	3.68	30.4	92	41.9	454	17	48
2628	351	2	40.2	84.6	71	77.5	1.9	1	14.9	5.79	40.6	145	57.1	477	14	53
2629	352	2	41.4	88.6	73	76.5	1.5	2	13.7	4.19	31.0	132	42.2	493	19	38
2630	353	2	39.6	80.1	71	76.0	2.0	2	13.5	4.00	29.8	114	38.8	866	19	38
2631	354	2	41.8	89.4	73	77.5	1.4	1	14.1	4.63	35.1	119	57.7	493	23	26
2632	355	2	39.7	88.1	67	76.1	1.7	2	13.4	3.38	26.4	109	41.7	640	22	28
2633	356	2	39.0	92.0	63	77.4	2.2	2	13.9	4.81	35.9	118	58.7	490	22	28
2634	357	2	37.3	80.6	64	74.6	2.3	2	14.9	3.92	26.7	119	46.7	662	15	52
2635	358	2	37.4	79.6	70	76.6	1.5	1	12.8	3.68	29.2	66	53.9	526	11	60
2636	359	2	40.0	82.3	65	76.0	2.2	2	13.1	3.67	30.5	78	39.7	785	12	58
2637	360	2	36.8	82.7	75	76.7	1.7	2	13.6	4.11	31.7	98	44.9	557	12	58
2638	361	2	40.3	83.9	70	78.1	1.5	1	14.5	4.62	32.9	115	40.1	601	31	6
2639	362	2	40.9	81.4	80	79.5	1.4	1	12.7	5.01	41.3	94	55.8	487	30	7
2640	363	2	43.1	91.1	67	76.7	1.2	1	13.5	3.87	29.4	93	48.6	1014	24	24
2641	364	2	36.8	72.1	76	77.3	n.d.	3	12.4	3.82	30.8	96	38.0	294	21	33
2642	365	2	35.5	66.7	62	77.0	2.0	2	13.3	4.03	30.5	98	37.5	518	14	53
2644	366	2	34.5	70.2	71	78.6	1.7	2	12.7	4.27	34.5	85	42.1	167	20	36

Table 34

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
2645	367	2	40.2	81.9	73	78.7	1.6	1	13.1	5.05	39.1	122	61.7	830	29	11
2646	368	2	44.2	91.8	69	78.3	1.6	1	13.9	5.25	38.1	126	62.3	694	26	18
2647	369	2	40.0	90.4	67	79.0	1.3	1	13.7	5.24	39.7	134	66.1	455	22	28
2648	370	2	39.2	82.2	63	77.0	1.5	2	14.3	4.03	29.1	107	36.4	358	11	60
2649	371	2	35.2	92.8	64	76.8	1.3	1	14.3	4.12	30.6	75	41.0	620	14	53
2650	372	2	39.6	97.1	58	77.2	1.2	1	12.9	4.09	32.1	68	39.3	449	18	44
2651	373	2	41.3	94.0	68	76.3	1.3	1	15.1	4.81	32.6	129	63.8	565	25	20
2652	374	2	34.9	75.5	62	76.5	1.3	1	13.2	4.25	32.3	65	46.8	674	14	53
2653	375	2	41.8	92.2	69	78.7	1.9	2	13.1	4.19	33.6	124	39.7	362	30	7
2654	376	2	32.8	69.3	74	77.5	1.1	1	13.7	4.09	31.9	91	49.4	499	9	62
2655	377	2	38.2	82.3	67	77.7	1.2	1	13.0	4.25	33.6	133	50.7	560	17	48
2656	378	2	40.2	85.5	63	78.5	1.4	1	13.0	3.97	32.1	77	46.9	350	25	20
2657	379	2	41.7	84.8	58	78.9	1.4	1	12.8	4.14	33.1	63	49.1	191	25	20
2658	380	2	39.1	80.9	69	77.0	1.1	1	13.7	3.73	28.5	95	33.7	725	8	63
2659	381	2	40.0	88.3	68	77.3	1.1	1	13.5	4.10	31.3	61	37.9	449	16	51
2660	382	2	37.2	67.1	77	78.0	1.1	1	13.4	4.09	32.8	97	40.6	384	18	44
2661	383	2	36.0	77.3	66	78.7	1.1	1	12.6	3.99	32.9	82	47.0	434	18	44
2662	384	2	39.0	79.2	70	79.4	1.3	1	12.6	4.96	39.8	105	60.8	388	27	15
2663	385	2	37.7	70.3	79	77.8	1.5	1	13.6	5.11	37.7	142	64.9	356	5	65
2664	386	2	41.8	92.1	75	78.7	1.7	1	13.7	5.33	40.5	122	67.8	367	30	7
2666	387	2	42.8	89.6	66	78.4	2.0	2	13.5	4.70	36.9	124	58.0	439	27	15
2667	388	2	37.9	77.9	73	79.7	1.4	1	12.8	4.81	40.3	119	61.7	206	36	1
2668	389	2	42.8	87.9	75	78.7	1.3	1	14.1	5.00	36.2	130	62.6	413	25	20
2669	390	2	41.2	83.1	70	79.0	1.4	1	13.0	4.79	39.9	121	60.7	322	29	11
2670	391	2	38.1	78.8	69	78.8	1.6	1	12.8	4.64	36.4	106	62.0	608	24	24
2671	392	2	39.0	82.7	68	78.2	1.4	1	13.2	4.60	35.8	125	58.1	510	27	15
2672	393	2	38.4	74.5	69	76.2	n.d.	3	13.7	4.05	30.2	94	37.7	734	6	64
2673	394	2	36.4	70.1	78	77.5	1.2	1	13.5	4.80	36.9	119	59.6	435	21	33
2674	395	2	38.0	60.4	69	76.8	1.6	1	13.8	4.54	33.8	114	50.7	671	22	28
2675	396	2	40.2	91.2	70	78.3	1.2	1	13.7	4.67	35.4	132	61.1	400	26	18

Table 34

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein		amylase	glucan	Quality	Score	Rank
2676	397	2	42.8	88.6	71	78.9	1.1	1	13.1	4.02	32.9	102	45.3	437	30	7
2677	398	2	37.8	68.3	73	78.5	1.4	1	12.3	4.75	40.7	103	62.3	392	32	4
2678	399	2	40.3	89.1	70	78.8	1.4	1	12.6	4.76	38.7	88	69.0	199	28	13
2679	400	2	36.5	68.6	77	77.8	1.4	1	14.2	4.87	36.1	118	67.0	241	19	38
2680	401	6	41.2	90.4	76	77.8	1.8	2	12.5	3.91	31.6	97	41.2	588	20	36
2643	HARRINGTON MALT CHECK	2	39.8	94.8	75	80.9	1.5	1	11.8	5.16	47.5	116	69.3	117	43	
2665	HARRINGTON MALT CHECK	2	39.8	94.6	74	80.8	1.5	1	12.0	5.26	46.7	124	72.0	87	43	
Minima			32.8	60.4	58	74.6	1.1		12.3	3.38	26.4	61	33.7	167	5	
Maxima			44.8	97.1	80	80.3	3.3		15.1	5.79	41.3	151	69.0	1014	36	
Means			39.6	82.8	71	77.7	1.6		13.4	4.39	34.0	107	50.2	501	21	
Standard Deviations			2.5	8.1	5	1.2	0.4		0.7	0.53	3.9	23	10.3	175	7	
Coefficients of Variation			6.4	9.8	7	1.5	26.9		5.1	12.00	11.4	21	20.5	35	34	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by T. Blake and P. Hensleigh, Montana State University - Bozeman, MT

2000 JARI'S SPRING BARLEY BREEDERS LINES - ABERDEEN, ID

Table 35

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)			
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)	(°F)	(ppm)	Score	Rank	
2088	BARONESSE	2	40.4	85.6	57	72.9	n.d.	3	16.7	4.02	25.1	124	43.8	666	21	24
2089	BU 4	2	46.0	96.6	56	74.6	1.6	1	17.0	5.25	31.0	183	64.6	555	15	36
2090	BU 6	2	43.9	95.3	57	73.6	1.7	1	18.7	5.46	30.5	198	66.5	602	15	36
2091	BU 11	2	43.1	95.3	53	73.5	1.4	1	18.1	4.71	26.1	124	43.7	808	33	1
2092	BU 15	2	41.4	74.5	56	70.4	1.4	1	19.3	4.22	22.0	135	44.8	777	17	31
2093	BU 16	2	41.4	88.5	53	73.8	1.5	1	18.1	4.85	27.3	139	42.6	691	27	11
2094	HARRINGTON	2	37.3	79.4	70	76.8	1.4	1	17.1	6.07	35.7	180	70.2	381	2	65
2095	BU 19	2	42.3	93.5	61	72.8	1.9	2	18.5	4.30	23.7	123	40.3	941	25	14
2096	BU 25	2	42.3	88.6	61	73.3	1.7	1	19.9	5.96	30.2	218	69.7	550	13	44
2097	BU 27	2	39.9	79.5	67	72.1	1.7	1	19.9	6.14	31.2	244	72.1	330	4	64
2098	BU 28	2	39.3	78.6	67	75.2	1.2	1	14.5	3.75	26.0	109	42.7	943	15	36
2099	BU 36	2	43.4	85.2	54	70.1	1.5	1	22.1	4.61	21.4	211	42.5	709	24	18
2100	BU 37	2	43.9	82.6	58	72.7	1.2	1	18.1	4.68	26.1	151	57.2	945	14	42
2102	BCD 47	2	41.1	81.2	63	75.6	1.7	1	17.4	5.99	36.0	210	80.6	423	9	56
2103	BU 38	2	39.9	87.4	66	76.5	1.7	1	17.1	5.54	34.0	203	72.9	389	10	48
2104	BU 44	2	39.1	77.4	59	71.6	1.3	1	19.0	4.50	24.4	159	45.0	747	18	30
2105	BU 45	2	43.0	90.4	52	74.4	1.5	2	17.6	4.63	26.8	107	42.1	956	29	5
2106	BU 53	2	44.5	93.5	58	73.9	1.6	1	17.8	5.53	31.8	206	68.0	380	15	36
2107	BU 56	2	43.5	90.5	64	74.3	2.4	1	20.1	7.39	37.2	227	81.7	480	12	45
2108	BU 61	2	42.9	95.8	55	74.8	2.2	1	18.9	6.10	33.3	187	65.4	491	12	45
2109	BU 63	2	40.9	76.3	57	71.1	1.5	1	20.0	5.27	26.7	223	60.9	649	9	56
2110	BU 66	2	42.3	86.5	63	73.2	1.4	1	17.2	4.52	27.5	143	51.5	639	21	24
2111	BU 68	2	40.3	95.9	58	73.4	1.6	1	18.2	5.42	29.8	198	56.7	362	14	42
2112	BU 69	2	43.6	96.0	54	72.7	1.5	1	19.4	4.77	25.0	115	42.4	905	33	1
2113	AJO 3	2	42.5	94.1	58	74.2	n.d.	3	18.0	5.00	28.7	132	46.7	829	28	8
2114	AJO 12	2	39.6	81.3	66	76.3	2.0	2	16.3	5.46	35.2	139	62.8	384	10	48
2115	AJO 19	2	41.0	85.2	66	72.5	1.7	1	20.5	6.24	30.6	217	69.8	566	9	56
2116	AJO 21	2	45.5	96.7	68	71.4	n.d.	3	20.3	4.96	25.1	209	55.2	770	17	31
2117	AJO 22	2	43.2	87.6	65	73.8	1.2	2	17.1	4.42	26.2	161	47.1	724	23	21
2118	AJO 23	2	43.9	88.8	60	73.3	1.6	1	19.6	6.25	32.5	186	66.9	424	10	48

Table 35

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Overall		
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
2119	BCD 47	2	41.1	84.3	63	74.6	1.9	1	19.0	6.34	33.3	228	81.0	516	6	62
2120	AJO 24	2	43.8	91.8	62	70.9	1.6	2	19.3	5.43	28.7	128	49.0	770	28	8
2121	AJO 28	2	46.2	86.3	64	73.3	1.7	1	19.8	6.21	32.1	168	89.6	706	10	48
2122	AJO 31	2	42.4	90.1	64	74.7	1.7	1	18.8	5.82	32.2	164	64.5	572	15	36
2123	AJO 34	2	42.5	82.9	65	75.3	1.7	1	17.6	5.93	34.0	195	77.6	527	10	48
2124	AJO 44	2	45.7	93.2	69	76.0	1.6	2	16.1	4.13	26.6	120	43.2	760	25	14
2126	AJO 45	2	44.4	81.5	66	71.3	2.1	1	21.7	6.50	30.6	182	70.9	682	7	59
2127	AJO 46	2	39.9	87.6	63	74.3	2.1	1	19.1	6.52	35.5	192	75.1	421	7	59
2128	AJO 47	2	44.9	81.7	56	71.1	n.d.	3	19.6	5.13	26.4	173	51.7	534	12	45
2129	AJO 51	2	36.1	74.5	74	75.7	1.2	1	15.5	4.31	28.8	141	50.5	523	6	62
2130	AJO 59	2	43.5	87.6	67	74.9	n.d.	3	16.8	4.24	25.8	132	46.7	626	19	28
2131	BCD 47	2	42.9	86.4	60	75.3	1.8	1	17.7	6.15	35.7	217	87.1	476	10	48
2132	AJO 61	2	43.7	86.4	68	76.1	1.5	1	15.7	4.99	32.6	156	71.7	532	17	31
2133	AJO 68	2	39.5	84.2	75	76.1	1.4	1	16.7	5.15	31.7	168	66.3	640	7	59
2134	OPS 6	2	39.7	84.7	71	74.1	1.6	2	17.2	4.01	24.2	95	42.5	917	10	48
2135	OPS 7	2	42.8	88.2	67	71.3	1.2	1	19.0	4.25	22.7	118	42.7	901	24	18
2136	OPS 13	2	43.6	92.3	67	72.5	n.d.	3	18.6	4.55	25.0	131	42.7	823	28	8
2137	OPS 18	2	44.9	92.0	69	73.5	1.1	2	18.8	4.47	24.5	143	45.2	824	25	14
2138	OPS 19	2	44.1	93.0	59	74.3	1.7	2	17.1	4.66	28.1	141	49.3	690	25	14
2139	OPS 26	2	44.3	87.2	65	72.3	1.1	1	18.2	4.34	24.1	159	46.8	687	17	31
2140	OPS 28	2	45.9	97.8	69	72.0	1.8	1	18.4	5.18	29.3	142	45.2	733	22	23
2141	OPS 30	2	44.4	94.8	63	72.5	2.3	2	17.5	4.99	28.6	116	51.9	800	29	5
2142	OPS 39	2	41.0	91.5	61	73.9	2.2	2	18.6	5.22	29.3	115	45.6	824	27	11
2143	OPS 40	2	40.1	82.8	69	71.2	1.4	1	17.5	4.68	27.5	141	46.9	729	20	27
2144	OPS 50	2	42.6	88.9	69	72.0	1.2	1	17.0	4.45	26.2	127	44.6	777	31	3
2145	OPS 58	2	43.1	92.5	69	70.1	1.3	1	21.5	4.91	23.2	191	54.8	658	23	21
2146	BARONESSE	2	39.6	83.2	66	72.5	1.7	2	17.1	4.26	25.2	144	45.3	597	10	48
2147	OPS 60	2	40.1	78.6	71	72.2	1.4	2	18.2	4.45	25.1	145	44.1	674	19	28
2148	OPS 62	2	41.1	86.7	60	71.6	1.3	1	19.0	4.65	24.7	134	39.8	795	24	18
2150	OPS 66	2	43.3	94.0	67	72.6	2.4	2	18.0	4.87	28.2	134	44.1	732	29	5

Table 35

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Overall		
			Weight 6/64"	(mg)	(%)	(Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(% ASBC)	(20°DU)	amylase (ppm)	glucan	
2151	OPS 67	2	42.9	90.7	69	71.9	1.3	1	18.5	4.76	26.3	141	42.2	786	26	13
2152	OPS 69	2	43.5	90.8	69	72.4	1.3	1	18.5	4.76	26.5	139	41.1	800	30	4
2153	OPS 78	2	41.8	93.3	73	74.8	1.5	2	15.8	4.15	27.0	111	38.0	769	21	24
2154	OPS 84	2	*34.7	*50.9	60	71.0	2.1	2	19.4	4.86	25.9	160	43.6	555	15	36
2155	HARRINGTON	2	40.4	88.5	72	78.7	1.3	1	16.1	5.78	36.3	177	61.0	384	16	35
2101	HARRINGTON MALT CHECK	2	40.2	95.1	74	82.0	1.4	1	11.6	5.29	47.7	123	67.6	182	44	
2125	HARRINGTON MALT CHECK	2	39.7	95.7	76	81.1	1.4	1	11.8	5.18	46.3	125	68.5	256	42	
2149	HARRINGTON MALT CHECK	2	40.2	94.5	75	81.7	1.3	1	11.8	5.16	46.7	123	63.2	218	44	
Minima			36.1	74.5	52	70.1	1.1		14.5	3.75	21.4	95	38.0	330	2	
Maxima			46.2	97.8	75	78.7	2.4		22.1	7.39	37.2	244	89.6	956	33	
Means			42.3	87.8	63	73.4	1.6		18.2	5.09	28.6	160	55.4	658	18	
Standard Deviations			2.1	5.9	6	1.8	0.3		1.5	0.77	4.0	37	13.8	169	8	
Coefficients of Variation			5.0	6.7	9	2.5	20.1		8.2	15.19	13.9	23	25.0	26	45	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 JARI'S SPRING BARLEY BREEDERS LINES - PULLMAN, WA

Table 36

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
2156	BARONESSE	2	37.3	85.6	69	76.8	n.d.	3	12.4	3.62	30.4	103	49.3	325	24	19
2157	BU 4	2	43.8	97.8	58	76.7	1.3	1	14.1	4.56	33.0	172	61.0	359	19	38
2158	BU 6	2	43.8	99.9	58	77.0	1.3	1	14.5	4.74	34.0	170	60.7	332	19	38
2159	BU 11	2	46.0	99.0	58	75.7	1.2	1	13.9	4.08	29.5	136	46.0	307	23	20
2160	BU 15	2	45.6	92.6	58	74.3	1.5	2	14.3	3.41	24.4	116	39.0	746	22	25
2161	BU 16	2	40.5	86.1	63	76.8	1.5	2	13.6	3.75	28.5	113	37.7	513	19	38
2162	HARRINGTON	2	38.0	89.7	68	80.1	1.1	1	12.5	4.66	39.1	124	53.3	309	35	3
2163	BU 19	2	43.6	93.5	60	74.5	1.4	2	15.1	4.09	27.0	140	37.2	672	19	38
2164	BU 25	2	45.2	96.1	65	78.6	1.2	1	14.0	4.74	34.8	174	55.3	304	23	20
2165	BU 27	2	40.9	86.2	74	78.0	1.1	1	13.3	4.38	33.1	160	49.0	193	28	9
2166	BU 28	2	41.2	83.4	70	77.2	1.4	2	12.0	3.46	29.7	104	45.7	681	26	14
2167	BU 36	2	44.5	97.7	55	75.0	n.d.	3	15.1	4.06	27.3	163	36.7	628	14	56
2168	BU 37	2	45.4	93.8	58	75.2	1.1	1	14.0	4.19	29.9	139	47.1	796	23	20
2169	BCD 47	2	40.8	88.9	70	78.4	1.1	1	13.2	4.59	35.0	173	59.1	231	28	9
2170	BU 38	2	39.9	89.7	66	78.8	1.1	1	13.1	4.65	36.0	171	53.7	215	30	6
2172	BU 44	2	41.6	94.8	63	75.6	n.d.	3	14.3	3.91	27.4	148	38.7	656	13	60
2173	BU 45	2	42.9	89.7	63	75.7	1.8	2	14.1	4.36	31.7	119	38.7	651	20	36
2174	BU 53	2	45.8	97.4	48	75.4	1.7	1	15.1	5.29	34.9	196	56.4	152	18	42
2175	BU 56	2	43.5	96.1	70	78.5	1.5	1	13.9	5.38	39.1	166	59.3	202	22	25
2176	BU 61	2	45.4	96.6	56	76.1	1.5	2	15.7	5.15	33.8	194	69.7	233	17	44
2177	BU 63	2	44.4	95.3	61	76.6	1.1	2	14.9	4.31	29.9	207	58.9	504	11	64
2178	BU 66	2	42.2	91.7	59	76.8	1.3	2	13.0	3.88	30.4	124	50.3	376	27	13
2179	BU 68	2	40.7	95.0	64	76.8	1.2	1	13.3	4.16	31.4	156	49.5	172	26	14
2180	BU 69	2	45.7	98.0	58	76.3	1.3	2	13.9	3.71	27.3	116	39.2	468	22	25
2181	AJO 3	2	43.5	96.3	65	77.1	1.3	1	13.6	4.40	33.4	121	48.7	299	36	2
2182	AJO 12	2	40.3	87.2	63	78.0	n.d.	3	13.0	4.73	37.9	131	62.5	195	30	6
2183	AJO 19	2	40.4	95.0	59	76.1	1.4	1	16.0	5.20	33.2	192	71.9	450	14	56
2184	AJO 21	2	43.0	97.1	62	73.7	n.d.	3	15.0	4.29	28.7	161	42.3	445	17	44
2185	AJO 22	2	41.0	92.3	61	73.8	1.3	2	15.1	4.15	28.0	149	47.2	505	17	44
2186	AJO 23	2	44.1	96.0	53	75.7	1.6	2	15.7	5.45	35.4	159	67.6	225	17	44

Table 36

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2187	BCD 47	2	41.1	88.0	70	78.2	1.3	1	13.4	4.85	37.8	179	84.1	119	32	4
2188	AJO 24	2	43.0	93.2	62	73.6	1.7	2	15.4	4.82	31.7	122	51.7	500	29	8
2189	AJO 28	2	47.0	95.1	64	76.9	1.5	1	14.7	5.54	39.1	146	77.6	507	15	54
2190	AJO 31	2	43.8	91.1	64	77.9	1.4	1	13.6	4.96	37.7	170	61.8	192	22	25
2191	AJO 34	2	43.2	94.6	67	77.5	1.4	1	13.6	4.84	36.4	154	79.4	121	26	14
2193	AJO 44	2	42.0	94.8	57	76.6	2.2	2	13.3	4.01	30.5	103	43.5	341	26	14
2194	AJO 45	2	45.0	90.4	62	75.1	1.5	1	15.6	5.21	34.1	150	65.6	442	15	54
2195	AJO 46	2	41.3	91.9	65	77.1	1.4	1	13.9	5.46	39.4	145	74.6	147	21	31
2196	AJO 47	2	45.3	94.7	51	74.2	2.0	2	14.8	4.91	33.6	148	52.8	308	22	25
2197	AJO 51	2	36.3	81.3	77	78.0	1.2	2	11.4	3.60	32.0	95	44.1	310	26	14
2198	AJO 59	2	37.4	73.7	71	76.4	n.d.	3	13.1	3.84	30.7	98	42.4	435	16	51
2199	BCD 47	2	43.4	93.9	68	78.9	1.2	1	13.0	4.91	37.8	160	85.4	154	31	5
2200	AJO 61	2	40.6	85.2	65	78.0	1.5	1	13.3	4.83	36.7	141	75.8	225	28	9
2201	AJO 68	2	36.7	81.0	71	77.7	1.3	1	13.8	4.41	33.3	135	68.3	335	13	60
2202	OPS 6	2	37.1	79.7	60	76.3	1.3	1	14.1	4.48	32.7	82	43.3	699	16	51
2203	OPS 7	2	40.8	88.1	67	75.1	1.2	1	15.2	4.04	26.7	93	43.6	725	16	51
2204	OPS 13	2	41.1	93.2	66	76.3	2.1	2	13.9	4.34	32.3	81	41.8	464	17	44
2205	OPS 18	2	44.0	95.7	72	76.0	1.2	1	14.7	4.12	28.5	108	43.1	763	23	20
2206	OPS 19	2	39.7	85.2	63	75.2	1.2	1	13.9	4.20	30.5	111	47.4	329	21	31
2207	OPS 26	2	42.1	90.5	66	75.5	1.1	1	14.1	3.86	27.5	99	47.5	457	23	20
2208	OPS 28	2	41.0	89.5	67	75.6	1.9	2	13.4	4.07	30.9	87	39.5	634	17	44
2209	OPS 30	2	42.5	90.7	58	74.5	n.d.	3	14.5	4.30	30.1	95	47.9	492	21	31
2210	OPS 39	2	40.2	91.1	67	76.2	n.d.	3	12.8	4.05	32.1	70	40.5	603	21	31
2211	OPS 40	2	38.6	80.0	73	75.4	1.5	2	13.5	3.76	28.0	97	45.7	509	14	56
2212	OPS 50	2	39.4	87.4	74	75.8	1.7	2	13.4	3.91	29.2	93	47.5	514	18	42
2214	OPS 58	2	42.5	97.8	63	74.3	n.d.	3	15.4	4.46	29.8	137	41.7	516	28	9
2215	BARONESSE	2	37.9	87.2	68	76.4	n.d.	3	12.9	3.60	29.5	96	43.4	220	22	25
2216	OPS 60	2	38.8	82.0	75	75.4	1.6	2	13.6	3.77	28.9	98	41.1	526	14	56
2217	OPS 62	2	37.2	*64.8	63	73.1	1.3	1	16.3	4.21	27.0	114	39.3	589	13	60
2218	OPS 66	2	43.1	93.7	71	75.3	n.d.	3	14.3	3.95	28.5	95	42.2	309	21	31

Table 36

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
2219	OPS 67	2	40.2	85.9	75	75.4	1.7	2	13.3	3.77	28.6	94	39.9	552	17	44
2220	OPS 69	2	39.1	84.1	73	75.4	1.4	1	13.3	3.89	30.6	95	41.7	551	20	36
2221	OPS 78	2	37.7	89.3	74	76.9	n.d.	3	12.5	3.88	31.8	65	38.2	683	12	63
2222	OPS 84	2	35.3	75.3	61	75.1	n.d.	3	14.0	3.89	28.7	84	39.8	630	4	65
2223	HARRINGTON	2	38.1	90.1	70	80.1	1.3	1	12.6	4.85	40.3	110	66.0	374	37	1
2171	HARRINGTON MALT CHECK	2	39.9	96.0	75	81.8	1.2	1	11.5	5.11	46.5	124	55.5	185	42	
2192	HARRINGTON MALT CHECK	2	39.7	94.7	75	81.3	1.3	1	11.9	5.11	46.0	124	68.9	139	46	
2213	HARRINGTON MALT CHECK	2	40.0	95.4	77	81.4	1.4	1	11.8	5.23	48.3	122	77.3	127	48	
Minima			35.3	73.7	48	73.1	1.1		11.4	3.41	24.4	65	36.7	119	4	
Maxima			47.0	99.9	77	80.1	2.2		16.3	5.54	40.3	207	85.4	796	37	
Means			41.6	90.7	65	76.3	1.4		13.9	4.35	32.0	130	51.7	422	21	
Standard Deviations			2.8	5.8	6	1.5	0.3		1.0	0.54	3.8	34	12.8	185	6	
Coefficients of Variation			6.8	6.4	10	2.0	18.0		7.2	12.43	11.8	26	24.8	44	30	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 JARI'S SPRING BARLEY BREEDERS LINES - PENDLETON, OR

Table 37

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2224	BARONESSE	2	33.1	50.1	73	73.5	n.d.	3	14.0	3.90	28.5	106	43.1	258	14	21
2225	BU 4	2	37.5	88.6	62	75.0	1.7	1	15.1	5.22	35.2	196	80.0	329	8	48
2226	BU 6	2	38.4	88.2	60	74.5	1.6	1	15.5	5.14	34.8	203	83.6	330	10	39
2227	BU 11	2	40.6	94.2	55	72.9	1.3	2	15.8	3.95	25.5	138	40.6	629	21	5
2228	BU 15	2	38.8	58.6	58	72.3	1.5	2	15.0	3.67	25.2	114	41.8	510	17	13
2229	BU 16	2	38.8	74.6	57	73.8	1.4	2	16.1	3.92	24.8	143	39.1	433	7	51
2230	HARRINGTON	2	32.7	57.2	74	77.8	1.2	1	14.7	5.10	35.0	155	71.9	241	12	28
2231	BU 19	2	39.9	89.4	57	73.5	n.d.	3	16.0	3.97	24.8	144	35.8	685	9	42
2232	BU 25	2	41.1	86.5	65	76.6	1.3	1	15.7	5.02	32.4	199	73.9	350	16	17
2233	BU 27	2	36.6	59.5	73	76.1	1.2	1	14.4	4.69	33.8	179	68.0	224	12	28
2234	BU 28	2	36.2	42.7	73	75.3	n.d.	3	13.0	3.67	28.7	111	44.7	586	19	7
2235	BU 36	2	39.3	81.9	51	71.5	n.d.	3	17.2	4.08	25.1	193	38.7	575	6	54
2236	BU 37	2	41.2	78.7	58	73.5	1.3	1	15.9	4.20	27.3	142	64.1	752	6	54
2238	BCD 47	2	38.3	70.6	67	75.7	1.3	1	15.0	4.85	33.9	192	81.5	305	11	33
2239	BU 38	2	36.6	69.3	66	76.3	1.5	1	14.6	4.87	34.5	166	71.3	205	12	28
2240	BU 44	2	38.1	75.0	60	73.3	n.d.	3	15.5	3.92	26.4	140	41.1	743	9	42
2241	BU 45	2	40.4	86.2	59	75.0	n.d.	3	14.6	3.98	27.3	114	38.1	651	18	10
2242	BU 53	2	39.3	81.6	49	73.6	1.7	2	15.8	5.20	34.2	200	76.4	313	6	54
2243	BU 56	2	38.8	83.0	68	76.9	1.5	1	14.4	5.28	37.3	148	77.2	391	7	51
2244	BU 61	2	43.0	94.0	56	76.2	2.2	1	15.8	5.08	33.1	201	79.5	317	19	7
2245	BU 63	2	41.9	81.2	64	75.9	2.2	1	14.3	4.05	28.3	178	62.8	724	6	54
2246	BU 66	2	38.2	59.0	64	75.1	2.5	1	12.9	3.53	27.5	98	48.1	604	20	6
2247	BU 68	2	39.7	88.8	69	76.4	1.5	1	13.7	3.99	30.5	162	51.0	259	14	21
2248	BU 69	2	41.8	87.1	60	73.4	2.5	2	15.5	3.58	23.2	111	32.2	935	15	18
2249	AJO 3	2	40.6	86.6	67	74.9	2.8	2	14.3	3.88	27.4	116	40.4	715	22	3
2250	AJO 12	2	34.2	44.5	70	75.3	2.1	1	14.6	4.96	34.3	153	72.6	217	12	28
2251	AJO 19	2	39.5	88.7	57	76.3	2.2	1	15.6	5.14	33.3	190	82.0	389	10	39
2252	AJO 21	2	40.7	90.0	57	72.7	2.8	2	15.7	4.16	26.6	177	41.9	658	17	13
2253	AJO 22	2	40.1	85.0	65	74.8	1.8	2	15.0	4.09	28.1	158	47.6	484	15	18
2254	AJO 23	2	41.6	87.5	53	74.8	2.7	1	16.3	5.73	35.4	173	70.7	264	15	18

Table 37

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2255	BCD 47	2	36.8	58.6	69	76.1	1.9	1	14.7	4.90	33.3	200	89.6	303	9	42
2256	AJO 24	2	39.8	76.6	66	73.2	2.3	1	16.0	4.44	27.8	117	55.3	654	18	10
2257	AJO 28	2	43.4	82.8	59	75.2	2.0	1	16.4	5.43	33.4	190	87.7	379	10	39
2258	AJO 31	2	41.5	84.1	60	77.9	1.9	1	14.5	5.13	37.1	185	77.1	177	12	28
2259	AJO 34	2	39.0	69.1	67	77.0	1.9	1	14.3	4.87	34.1	196	90.2	177	14	21
2260	AJO 44	2	41.6	87.0	60	75.5	2.3	2	14.4	3.73	26.9	122	43.7	408	22	3
2262	AJO 45	2	43.0	75.4	64	75.4	2.4	1	15.6	5.07	33.3	155	68.5	472	14	21
2263	AJO 46	2	39.5	75.6	66	75.4	1.4	1	15.6	5.01	32.5	191	82.9	248	14	21
2264	AJO 47	2	41.0	75.2	54	71.0	n.d.	3	16.7	4.25	26.2	180	47.8	626	11	33
2265	AJO 51	2	30.3	31.8	83	74.2	1.4	2	13.4	3.63	27.2	138	50.5	249	17	13
2266	AJO 59	2	36.6	49.9	70	74.2	n.d.	3	14.9	3.71	25.6	125	42.1	571	14	21
2267	BCD 47	2	38.5	69.0	68	76.7	1.4	1	13.6	4.61	33.8	200	95.8	245	14	21
2268	AJO 61	2	38.2	57.9	69	76.2	1.5	1	14.7	4.58	32.1	192	88.3	386	11	33
2269	AJO 68	2	33.7	50.1	71	76.2	1.2	1	14.4	4.29	31.2	172	73.2	449	2	62
2270	OPS 6	2	32.2	27.8	73	72.6	n.d.	3	15.1	3.77	25.3	94	41.1	877	7	51
2271	OPS 7	2	39.8	78.0	70	73.7	1.6	2	15.2	3.86	25.4	116	44.7	860	17	13
2272	OPS 13	2	37.6	73.9	64	73.2	n.d.	3	15.1	3.78	25.1	107	40.8	863	11	33
2273	OPS 18	2	42.9	93.9	74	75.2	n.d.	3	14.9	4.24	29.6	132	50.1	842	18	10
2274	OPS 19	2	37.7	75.7	64	73.5	n.d.	3	14.4	3.91	27.3	125	38.3	554	11	33
2275	OPS 26	2	37.9	58.8	66	72.5	n.d.	3	15.2	3.98	26.3	106	27.9	885	4	59
2276	OPS 28	2	38.1	43.1	70	72.6	1.0	1	15.6	3.74	24.5	126	34.7	807	11	33
2277	OPS 30	2	42.1	85.9	65	76.0	n.d.	3	13.4	4.32	33.7	102	44.0	498	24	2
2278	OPS 39	2	33.6	34.9	78	73.2	n.d.	3	14.0	3.91	29.3	88	32.4	689	0	63
2279	OPS 40	2	32.0	19.3	83	72.4	n.d.	3	13.6	3.82	28.5	90	34.3	645	0	63
2280	OPS 50	2	31.1	15.1	83	71.8	1.5	2	15.6	3.99	26.8	109	36.7	591	9	42
2281	OPS 58	2	39.2	80.9	61	72.8	n.d.	3	16.2	4.23	25.5	151	37.6	743	6	54
2282	BARONESSE	2	30.6	37.3	79	72.9	n.d.	3	13.5	3.71	27.6	108	37.0	356	8	48
2283	OPS 60	2	32.5	18.8	82	72.8	1.7	2	14.6	4.08	28.7	103	36.2	718	9	42
2284	OPS 62	2	36.7	52.4	67	72.8	1.3	1	16.5	3.87	24.3	120	34.0	887	9	42
2286	OPS 66	2	42.6	87.1	73	74.1	n.d.	3	15.5	4.39	28.5	118	38.2	590	19	7

Table 37

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	S/T	DP						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2287	OPS 67	2	33.6	29.8	79	73.1	n.d.	3	13.5	3.89	29.6	89	35.6	632	4	59
2288	OPS 69	2	32.1	14.8	80	72.7	n.d.	3	14.0	3.89	28.3	94	37.2	652	4	59
2289	OPS 78	2	31.5	45.1	76	73.8	n.d.	3	14.5	3.93	28.1	91	34.1	655	0	63
2290	OPS 84	2	30.0	12.3	72	72.0	n.d.	3	15.6	4.08	26.5	98	37.2	629	8	48
2291	HARRINGTON	2	33.8	68.3	76	79.2	1.2	1	12.6	4.61	37.3	126	94.2	317	25	1
2237	HARRINGTON MALT CHECK	2	40.4	95.0	76	81.7	1.4	1	12.3	5.29	46.4	115	67.4	221	44	
2261	HARRINGTON MALT CHECK	2	40.2	95.3	77	82.0	1.9	1	11.6	5.18	47.4	133	79.6	120	45	
2285	HARRINGTON MALT CHECK	2	39.5	95.7	75	81.5	1.5	1	11.7	5.17	47.2	119	71.3	160	42	
Minima			30.0	12.3	49	71.0	1.0		12.6	3.53	23.2	88	27.9	177	0	
Maxima			43.4	94.2	83	79.2	2.8		17.2	5.73	37.3	203	95.8	935	25	
Means			37.8	66.2	67	74.5	1.7		14.9	4.31	29.6	144	55.1	519	12	
Standard Deviations			3.6	23.0	8	1.7	0.5		1.0	0.56	3.9	37	20.0	215	6	
Coefficients of Variation			9.6	34.7	12	2.3	28.1		6.6	13.05	13.1	26	36.4	41	49	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 JARI'S SPRING BARLEY BREEDERS LINES - Klamath Falls, OR

Table 38

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2292	BARONESSE	2	44.4	91.6	68	76.1	n.d.	3	13.6	3.85	28.4	119	40.9	217	27	9
2293	BU 4	2	47.6	96.3	65	75.1	1.7	1	16.0	5.64	36.1	187	66.3	333	15	53
2294	BU 6	2	47.8	96.5	66	75.4	1.7	1	15.5	5.58	36.8	201	67.4	346	15	53
2295	BU 11	2	48.2	96.2	60	72.3	1.4	1	17.9	4.54	25.8	140	40.0	725	23	22
2296	BU 15	2	47.5	88.9	66	73.6	1.4	2	15.1	4.17	27.6	152	36.2	534	13	60
2297	BU 16	2	45.3	88.0	61	74.8	1.5	2	16.3	4.27	26.8	156	43.1	412	16	48
2298	HARRINGTON	2	42.5	85.4	66	77.9	n.d.	3	14.8	5.94	40.7	165	64.4	189	19	31
2299	BU 19	2	45.6	90.5	62	73.2	1.4	1	17.7	4.43	25.1	143	30.6	707	19	31
2300	BU 25	2	49.2	92.9	68	78.1	1.9	1	15.3	5.93	39.6	192	61.0	141	26	11
2301	BU 27	2	46.8	85.9	74	77.8	1.7	1	14.1	5.49	39.6	179	62.2	158	16	48
2302	BU 28	2	46.0	90.9	68	76.9	1.2	1	13.3	3.92	30.4	124	48.1	564	31	3
2303	BU 36	2	48.1	91.9	58	72.7	1.5	1	17.5	4.24	24.5	195	37.0	452	16	48
2304	BU 37	2	49.3	88.6	61	74.2	1.4	1	16.0	4.68	29.4	169	63.7	679	17	41
2306	BCD 47	2	45.8	88.5	64	75.4	1.8	1	16.7	5.57	33.4	199	84.5	294	16	48
2307	BU 38	2	45.1	90.6	64	70.8	1.8	1	15.1	5.40	36.7	175	68.9	248	18	38
2308	BU 44	2	45.2	86.7	62	72.9	1.3	1	17.6	4.26	24.9	172	41.5	596	17	41
2309	BU 45	2	49.7	92.2	60	74.4	1.5	1	16.1	4.04	25.3	116	33.4	758	19	31
2310	BU 53	2	48.8	91.8	57	73.2	1.8	1	17.8	5.55	31.7	217	67.4	245	18	38
2311	BU 56	2	46.9	92.0	62	75.6	2.1	1	17.5	6.33	37.5	184	73.0	328	12	63
2312	BU 61	2	47.1	91.5	56	74.5	2.0	1	18.4	6.02	31.9	219	74.1	202	15	53
2313	BU 63	2	47.7	88.6	62	75.4	1.3	1	16.9	4.83	28.9	189	54.9	551	21	30
2314	BU 66	2	47.7	90.3	64	76.6	1.3	1	13.9	4.30	32.0	146	47.5	387	19	31
2315	BU 68	2	46.9	96.8	61	75.6	1.9	1	16.1	5.41	35.4	190	53.0	221	22	27
2316	BU 69	2	47.1	91.1	64	72.6	1.3	1	17.9	4.19	23.8	123	35.2	729	23	22
2317	AJO 3	2	44.9	90.5	62	74.2	1.9	2	17.1	4.60	27.1	131	40.8	488	29	7
2318	AJO 12	2	43.1	80.1	70	77.1	1.9	1	14.1	5.15	36.4	137	59.1	287	17	41
2319	AJO 19	2	43.2	88.6	68	75.9	1.5	1	16.8	5.42	33.0	186	72.7	302	13	60
2320	AJO 21	2	48.3	96.7	75	73.3	1.8	2	17.0	4.43	26.4	173	40.0	575	25	18
2321	AJO 22	2	46.7	93.1	69	74.7	1.2	1	15.3	4.16	28.1	149	44.4	507	19	31
2322	AJO 23	2	48.8	91.1	64	75.2	1.6	1	16.6	5.77	35.4	170	63.4	288	18	38

Table 38

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2323	BCD 47	2	46.2	90.3	67	77.5	1.8	1	15.4	5.58	38.0	201	76.6	313	15	53
2324	AJO 24	2	48.3	94.2	63	72.6	1.4	1	17.0	5.19	31.1	139	49.7	581	26	11
2325	AJO 28	2	52.5	92.0	68	75.7	1.7	1	16.7	5.88	35.4	184	70.7	605	15	53
2327	AJO 31	2	49.9	94.7	64	78.0	1.9	1	14.8	5.87	40.5	179	63.4	241	27	9
2328	AJO 34	2	48.3	91.2	62	77.1	1.9	1	15.5	5.86	38.5	201	74.5	327	15	53
2329	AJO 44	2	46.7	89.4	66	76.1	n.d.	3	15.3	4.08	26.8	125	41.8	604	22	27
2330	AJO 45	2	48.5	84.0	67	74.5	1.7	1	17.3	5.41	32.1	176	59.7	659	10	64
2331	AJO 46	2	46.4	88.8	65	75.9	1.8	1	16.5	5.85	36.3	200	64.5	359	13	60
2332	AJO 47	2	50.1	92.2	65	73.6	1.4	1	15.6	4.53	29.8	153	48.4	407	26	11
2333	AJO 51	2	42.8	99.0	69	76.2	1.4	1	14.6	4.30	30.4	144	45.3	450	19	31
2334	AJO 59	2	44.3	87.7	68	76.6	1.6	2	13.8	3.95	28.8	123	41.7	472	23	22
2335	BCD 47	2	46.5	91.7	60	76.8	1.9	1	15.3	5.69	38.1	207	78.7	339	15	53
2336	AJO 61	2	47.3	87.8	69	76.6	1.6	1	15.5	4.82	32.3	158	66.2	445	17	41
2337	AJO 68	2	42.2	86.1	66	76.2	1.5	1	15.8	5.06	33.1	167	64.3	421	17	41
2338	OPS 6	2	43.0	82.8	69	75.2	1.4	2	15.3	4.10	27.8	94	39.7	747	10	64
2339	OPS 7	2	46.6	92.3	66	75.5	1.2	2	15.7	3.98	26.5	109	38.0	801	19	31
2340	OPS 13	2	45.6	84.9	71	74.5	n.d.	3	15.3	4.18	28.3	122	39.4	684	16	48
2341	OPS 18	2	48.1	90.1	66	75.3	1.2	1	17.2	4.66	27.6	145	44.7	721	26	11
2342	OPS 19	2	44.0	85.3	63	74.6	n.d.	3	15.7	4.47	30.0	137	45.5	518	26	11
2343	OPS 26	2	46.8	87.2	68	74.8	1.1	1	14.6	4.05	27.9	142	44.1	532	17	41
2344	OPS 28	2	46.8	89.0	69	73.7	n.d.	3	15.8	4.45	29.5	122	38.9	762	26	11
2345	OPS 30	2	48.1	90.8	67	73.0	1.6	1	17.4	5.20	30.9	139	47.1	617	26	11
2346	OPS 39	2	44.8	89.0	66	75.2	n.d.	3	15.6	4.68	31.3	111	41.6	610	29	7
2348	OPS 40	2	44.6	84.1	72	74.1	1.3	2	15.2	4.49	29.8	134	44.7	643	24	20
2349	OPS 50	2	45.3	86.3	64	74.0	1.3	2	16.2	4.63	29.8	143	43.1	641	23	22
2350	OPS 58	2	49.6	94.3	67	73.5	1.3	2	16.0	4.53	28.8	168	44.3	576	25	18
2351	BARONESSE	2	45.1	90.6	65	76.6	n.d.	3	12.9	3.70	29.6	113	46.2	249	32	2
2352	OPS 60	2	46.5	89.0	67	74.4	1.3	2	15.2	4.50	30.0	115	41.4	708	30	4
2353	OPS 62	2	44.9	84.8	64	73.4	1.2	2	16.3	4.31	27.0	111	37.8	721	17	41
2354	OPS 66	2	46.6	90.9	64	74.7	n.d.	3	16.1	4.39	28.3	114	41.7	468	24	20

Table 38

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
2355	OPS 67	2	45.2	85.9	71	73.8	1.3	2	16.5	4.57	28.3	127	44.7	661	30	4
2356	OPS 69	2	44.9	86.1	68	74.7	1.3	2	15.0	4.64	31.8	120	40.2	655	30	4
2357	OPS 78	2	42.2	87.3	69	77.4	n.d.	3	13.7	4.52	34.2	83	42.9	437	22	27
2358	OPS 84	2	*38.8	*73.1	63	74.9	n.d.	3	14.9	4.41	30.3	119	44.4	482	23	22
2359	HARRINGTON	2	44.7	88.0	68	80.0	1.5	1	13.3	5.80	45.4	142	71.4	221	33	1
2305	HARRINGTON MALT CHECK	2	39.2	94.7	76	81.6	1.4	1	12.1	5.09	44.0	115	75.6	143	55	
2326	HARRINGTON MALT CHECK	2	39.9	94.9	77	81.7	1.5	1	12.0	5.29	48.0	132	75.1	141	43	
2347	HARRINGTON MALT CHECK	2	39.2	95.1	75	81.5	1.4	1	12.3	5.36	47.4	134	74.0	76	39	
Minima			42.2	80.1	56	70.8	1.1		12.9	3.70	23.8	83	30.6	141	10	
Maxima			52.5	99.0	75	80.0	2.1		18.4	6.33	45.4	219	84.5	801	33	
Means			46.5	89.9	65	75.1	1.5		15.8	4.84	31.4	153	52.0	479	21	
Standard Deviations			2.1	3.7	4	1.7	0.3		1.3	0.69	4.7	33	13.6	183	6	
Coefficients of Variation			4.6	4.1	6	2.2	17.0		8.1	14.22	14.9	21	26.2	38	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 JARI'S SPRING BARLEY BREEDERS LINES - TULE LAKE, CA

Table 39

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)			
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)	(ppm)	(ppm)	Score	Rank	
2360	BARONESSE	2	42.6	89.0	73	75.7	1.3	2	14.3	3.74	27.1	99	48.6	464	20	27
2361	BU 4	2	47.6	99.1	64	78.7	1.3	1	14.3	5.21	38.6	150	78.4	212	22	21
2362	BU 6	2	47.0	96.0	61	78.6	1.3	1	14.1	5.29	37.7	163	81.6	263	22	21
2363	BU 11	2	48.4	97.9	62	76.7	0.9	2	14.6	3.75	26.8	107	41.7	592	22	21
2364	BU 15	2	49.4	95.5	60	76.0	1.0	2	14.1	3.48	25.2	111	40.1	824	25	14
2365	BU 16	2	43.8	86.9	61	76.7	1.0	2	14.1	3.53	25.5	103	38.1	642	17	38
2366	HARINGTON	2	44.2	92.8	71	79.0	1.2	1	14.8	5.68	38.5	155	69.4	314	19	29
2367	BU 19	2	45.7	93.2	63	75.4	1.1	2	15.9	3.67	23.4	119	34.3	911	18	35
2369	BU 25	2	49.5	97.0	69	79.2	1.3	1	13.8	4.90	36.7	153	72.6	230	26	9
2370	BU 27	2	44.8	92.8	76	80.0	1.2	1	12.9	4.82	38.7	156	73.0	166	34	2
2371	BU 28	2	40.8	81.1	71	77.4	1.1	2	12.7	3.62	29.5	108	42.8	811	21	25
2372	BU 36	2	46.5	95.9	62	75.3	1.4	2	15.5	4.00	25.9	155	36.4	724	15	44
2373	BU 37	2	48.5	93.9	63	75.8	1.2	1	15.3	4.46	30.2	123	59.3	850	26	9
2374	BCD 47	2	46.3	94.0	69	79.4	1.3	1	13.9	5.20	38.5	155	74.5	276	25	14
2375	BU 38	2	43.3	91.4	69	79.9	1.3	1	13.5	4.95	37.6	162	78.0	149	38	1
2376	BU 44	2	45.5	95.3	64	75.3	1.1	2	15.5	3.83	26.1	138	35.7	835	19	29
2377	BU 45	2	46.6	93.8	65	76.3	1.1	2	14.5	3.61	25.6	92	33.8	1031	11	57
2378	BU 53	2	48.0	97.7	60	77.1	1.1	1	14.8	4.82	32.1	177	60.1	241	22	21
2379	BU 56	2	45.7	95.3	67	79.7	1.4	1	14.3	5.46	39.0	122	73.9	254	32	3
2380	BU 61	2	47.7	96.1	59	77.7	1.2	1	15.0	4.77	32.1	167	86.6	397	19	29
2381	BU 63	2	44.9	93.8	67	77.4	1.0	1	14.5	4.32	30.7	169	54.5	669	16	42
2382	BU 66	2	43.2	80.8	65	76.7	1.1	1	14.0	3.77	27.7	118	46.5	558	21	25
2383	BU 68	2	43.3	95.1	70	78.7	1.0	1	13.8	4.07	31.2	147	53.5	123	27	7
2384	BU 69	2	48.6	97.0	62	75.8	1.3	2	15.1	3.62	24.2	109	35.1	860	19	29
2385	AJO 3	2	47.4	95.8	66	77.1	1.7	2	14.1	4.24	30.4	109	36.1	457	19	29
2386	AJO 12	2	42.5	87.1	68	77.8	1.8	1	14.2	5.16	38.5	123	63.9	310	20	27
2387	AJO 19	2	43.5	94.8	71	76.7	1.3	1	16.6	5.36	32.6	174	77.3	440	15	44
2388	AJO 21	2	43.6	88.4	71	72.9	1.5	2	17.3	4.34	25.4	180	41.3	629	16	42
2390	AJO 22	2	42.1	81.1	66	73.2	1.2	1	17.3	4.23	24.7	135	40.2	715	18	35
2391	AJO 23	2	44.4	89.2	62	74.1	1.4	1	17.9	5.63	32.5	162	67.3	584	13	52

Table 39

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)	Score	Rank	
2392	BCD 47	2	47.2	96.7	70	80.3	1.3	1	13.3	5.25	39.5	161	86.4	260	30	4
2393	AJO 24	2	46.1	96.1	73	74.0	1.2	1	15.8	4.53	29.1	109	46.8	642	30	4
2394	AJO 28	2	47.2	85.0	66	76.5	1.7	1	17.1	5.83	34.7	152	88.4	559	13	52
2395	AJO 31	2	48.4	97.3	66	78.3	1.2	1	14.3	5.02	36.0	153	58.8	213	26	9
2396	AJO 34	2	46.9	95.3	68	78.8	1.2	1	13.7	4.91	35.9	158	77.3	243	26	9
2397	AJO 44	2	44.1	89.1	63	75.1	n.d.	3	15.9	3.60	23.3	94	31.5	753	8	63
2398	AJO 45	2	48.2	96.1	72	75.6	1.3	1	17.5	5.23	31.4	152	63.6	499	15	44
2399	AJO 46	2	44.7	92.6	71	77.5	1.3	1	15.0	5.40	37.1	165	64.4	308	15	44
2400	AJO 47	2	46.8	93.0	65	74.1	1.5	2	17.4	4.66	26.9	132	39.2	527	26	9
2401	AJO 51	2	39.9	91.2	74	78.0	1.1	1	12.1	3.62	31.0	105	37.7	455	27	7
2402	AJO 59	2	41.1	79.0	70	75.3	1.7	2	15.2	3.62	24.6	107	32.7	748	9	61
2403	BCD 47	2	46.2	94.9	70	79.6	1.3	1	13.6	5.02	38.5	155	71.1	245	29	6
2404	AJO 61	2	45.1	90.9	69	78.5	1.2	1	13.6	4.61	34.8	143	64.5	398	23	19
2405	AJO 68	2	40.4	83.8	75	77.6	1.1	1	15.1	4.56	31.7	130	56.1	599	17	38
2406	OPS 6	2	38.3	*73.0	72	75.3	n.d.	3	14.5	3.75	26.5	67	27.7	928	2	65
2407	OPS 7	2	42.8	84.3	71	74.3	1.2	1	16.7	3.97	24.2	100	33.6	860	11	57
2408	OPS 13	2	41.8	88.6	71	74.5	n.d.	3	15.8	3.92	25.1	101	30.5	789	11	57
2409	OPS 18	2	45.4	94.2	70	75.0	1.1	1	16.4	3.88	23.8	93	31.5	892	12	55
2410	OPS 19	2	41.0	82.4	64	73.8	n.d.	3	15.3	3.88	25.7	116	35.4	658	15	44
2412	OPS 26	2	43.8	87.8	69	74.2	1.0	2	16.1	3.82	24.3	120	40.2	714	23	19
2413	OPS 28	2	42.9	90.6	76	73.5	n.d.	3	15.7	3.97	25.8	85	33.7	814	10	60
2414	OPS 30	2	47.6	95.8	66	74.9	1.7	2	15.5	4.39	28.3	93	39.8	672	15	44
2415	OPS 39	2	44.2	93.8	69	76.2	n.d.	3	13.1	3.68	28.5	66	34.4	822	15	44
2416	OPS 40	2	41.6	89.9	73	75.6	1.2	2	13.6	3.77	29.0	83	39.8	744	12	55
2417	OPS 50	2	41.6	92.5	74	75.9	1.3	2	13.6	3.78	29.1	86	40.5	795	17	38
2418	OPS 58	2	46.6	97.0	70	74.2	1.5	2	16.9	4.42	27.3	128	61.6	524	25	14
2419	BARONESSE	2	42.7	89.4	70	74.3	n.d.	3	15.3	3.58	23.8	105	42.2	570	19	29
2420	OPS 60	2	40.8	89.5	74	75.2	1.4	2	13.8	3.86	28.4	89	41.8	714	15	44
2421	OPS 62	2	42.6	78.3	68	73.8	1.1	1	16.3	4.12	25.9	100	41.7	845	18	35
2422	OPS 66	2	46.8	96.4	74	75.1	n.d.	3	14.6	3.73	25.8	90	42.1	687	17	38

Table 39

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Overall		
			Weight 6/64"	(mg)	(%)	(Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(°ASBC)	(20°DU)	amylase (ppm)	glucan Score	
2423	OPS 67	2	40.5	87.8	72	76.1	1.0	1	13.7	3.59	27.7	80	38.6	753	13	52
2424	OPS 69	2	43.2	95.0	75	76.5	1.1	1	13.0	3.77	29.2	80	40.8	715	24	17
2425	OPS 78	2	42.3	94.3	73	78.0	1.4	2	13.4	3.94	30.9	80	38.6	559	24	17
2426	OPS 84	2	37.9	83.9	66	75.3	1.6	1	15.2	3.98	27.1	95	39.5	787	6	64
2427	HARRINGTON	2	37.3	75.5	69	77.8	1.1	1	15.6	5.27	34.5	136	61.3	450	9	61
2368	HARRINGTON MALT CHECK	2	39.1	95.2	76	81.2	1.5	1	12.7	5.45	45.3	121	76.4	84	46	
2389	HARRINGTON MALT CHECK	2	39.6	95.4	74	81.8	1.4	1	11.6	5.29	49.1	120	97.6	106	46	
2411	HARRINGTON MALT CHECK	2	39.7	95.0	72	81.1	1.4	1	11.6	4.91	45.4	120	66.7	167	51	
Minima			37.3	75.5	59	72.9	0.9		12.1	3.48	23.3	66	27.7	123	2	
Maxima			49.5	99.1	76	80.3	1.8		17.9	5.83	39.5	180	88.4	1031	38	
Means			44.5	91.3	68	76.4	1.3		14.9	4.35	30.1	124	51.2	573	19	
Standard Deviations			2.9	5.5	4	1.9	0.2		1.3	0.67	5.0	31	17.2	237	7	
Coefficients of Variation			6.6	6.1	6	2.5	16.0		8.8	15.49	16.6	25	33.6	41	37	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 PENDLETON WINTER BARLEY NURSERY - PENDLETON, OR

Table 40

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort		S/T	DP	Alpha-	Beta-	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(% ASBC)	(°ASBC)	(20°DU)	(ppm)	amylase	glucan
3825	IDYT 1 EIGHT-TWELVE	6	33.8	90.5	73	80.4	n.d.	3	7.1	3.98	59.0	56	40.8	76	32	23
3826	IDYT 2 88AB536-B	6	29.8	79.2	67	81.3	1.7	1	8.4	4.53	56.8	86	57.4	36	28	30
3827	IDYT 3 85AB216	6	40.1	98.2	60	84.4	2.0	1	7.9	4.85	65.7	83	56.9	14	38	15
3828	IDYT 4 92AB1308	6	31.5	79.9	71	81.5	1.8	1	7.6	3.86	58.2	66	55.9	55	33	22
3829	IDYT 5 92AB1841	6	30.8	79.0	70	82.0	1.7	1	8.1	4.35	60.4	78	58.0	26	30	27
3830	IDYT 6 94AB2299	6	36.9	94.0	74	84.5	1.6	1	7.4	4.60	69.0	66	77.2	47	37	17
3832	IDYT 7 86AB1034	6	40.2	97.4	66	84.4	1.6	1	7.3	4.22	59.7	58	57.1	66	34	21
3833	IDYT 8 88AB539-B	6	30.3	79.9	67	81.5	1.8	1	7.9	4.25	60.5	73	60.7	27	26	32
3834	IDYT 9 88AB953	6	35.8	80.2	67	78.0	n.d.	3	8.2	3.97	51.4	59	42.9	464	23	34
3835	IDYT 10 91AB9	6	35.1	92.1	68	79.3	n.d.	3	8.8	3.95	47.9	69	45.6	179	32	23
3836	IDYT 11 92AB308	6	38.7	90.3	64	79.8	2.1	2	8.7	3.79	46.8	54	38.8	306	23	34
3837	IDYT 12 92AB827	6	42.7	98.7	60	83.3	1.5	1	9.1	4.56	53.3	71	60.8	236	30	27
3838	IDYT 13 94AB1269	6	41.4	97.9	64	83.2	1.6	1	9.6	5.03	57.8	79	76.8	129	41	10
3839	IDYT 14 94AB1275	6	40.7	99.2	70	84.6	1.7	1	8.9	4.83	60.3	72	79.3	72	37	17
3840	IDYT 15 94AB1386	6	40.7	99.0	63	83.5	2.3	1	9.3	5.28	59.2	93	75.7	110	41	10
3841	IDYT 16 96AB11	6	35.5	92.2	69	79.1	1.6	2	8.7	3.52	42.9	60	35.9	445	28	30
3842	IDYT 17 96AB273	6	34.1	91.9	76	82.2	1.3	1	8.9	4.41	55.1	64	57.1	111	38	15
3843	IDYT 18 96AB474	6	34.9	93.8	73	81.4	1.4	1	9.3	5.12	58.4	84	60.6	104	41	10
3844	IDYT 19 96AB531	6	31.4	72.6	72	78.7	1.5	1	8.9	4.69	53.7	93	60.2	109	32	23
3845	IDYT 20 96AB564	6	32.7	73.5	69	77.6	2.1	2	9.6	4.17	46.1	91	51.0	493	21	37
3846	ORWB1 1 88AB536-B	6	28.7	63.3	64	79.2	1.5	1	12.0	5.30	47.9	167	59.4	193	35	19
3847	ORWB1 7 KAB 18	6	27.2	63.4	74	81.0	1.5	1	8.5	4.17	51.3	90	57.5	72	24	33
3848	ORWB1 8 KAB 37	6	34.6	92.6	62	81.7	n.d.	3	9.2	4.21	47.9	58	55.0	174	35	19
3849	ORWB1 9 KAB 43	6	32.1	84.2	54	78.9	1.6	1	12.8	5.05	42.4	139	62.8	105	47	3
3850	ORWB1 10 KAB 47	6	29.3	87.4	67	82.2	1.9	1	9.1	4.35	50.2	64	68.7	106	31	26
3851	ORWB1 11 KAB 50	6	29.3	73.9	71	81.9	1.7	1	10.1	4.48	49.4	88	61.3	136	29	29
3853	ORWB1 12 KAB 51	6	35.6	94.0	65	79.7	2.0	2	11.8	4.59	40.4	141	58.0	168	47	3
3854	ORWB1 14 KAB 65	6	29.9	68.1	75	80.9	n.d.	3	10.9	4.74	46.8	141	53.1	130	50	2
3855	ORWB1 15 KAB 68	6	32.4	83.6	73	82.0	1.4	1	9.7	4.11	45.8	109	48.7	225	42	8
3856	ORWB1 16 STAB 7	6	29.7	77.4	62	81.0	1.8	1	10.9	4.73	44.5	138	57.9	126	56	1

Table 40

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-			
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Overall
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
3857	ORWB1 17 STAB 33	6	33.7	93.2	63	79.9	n.d.	3	9.7	3.91	44.2	85	45.9	94	41	10
3858	ORWBA 18 STAB 34	6	32.3	77.0	72	80.7	n.d.	3	9.7	4.01	43.0	64	53.8	274	40	14
3859	ORWB1 20 STAB 47	6	32.3	85.6	60	78.3	2.1	2	12.4	5.06	43.8	125	53.5	69	47	3
3860	ORWB1 21 STAB 64	6	34.8	85.6	63	79.5	n.d.	3	10.3	3.50	36.6	74	38.9	343	22	36
3861	ORWB1 24 STAB 113	6	27.3	54.6	67	82.3	1.6	1	10.8	4.82	45.3	139	55.3	33	42	8
3862	ORWB1 27 STAB 171	6	31.1	89.3	64	84.2	n.d.	3	10.8	4.65	46.0	62	50.3	53	46	6
3863	ORWB1 25 STAB 120	6	31.3	86.5	71	83.0	2.4	2	11.3	5.19	49.1	71	60.4	119	44	7
3831	MOREX MALT CHECK	6	30.7	70.8	73	79.2	1.7	1	12.1	5.99	52.5	142	70.9	53	39	
3852	MOREX MALT CHECK	6	30.7	68.2	72	79.7	1.8	1	12.6	6.01	51.6	140	70.5	63	28	
Minima			27.2	54.6	54	77.6	1.3		7.1	3.50	36.6	54	35.9	14	21	
Maxima			42.7	99.2	76	84.6	2.4		12.8	5.30	69.0	167	79.3	493	56	
Means			33.8	84.8	67	81.3	1.7		9.5	4.45	51.3	87	56.5	149	36	
Standard Deviations			4.1	11.2	5	2.0	0.3		1.4	0.48	7.6	30	10.4	124	9	
Coefficients of Variation			12.3	13.2	8	2.4	15.9		15.3	10.87	14.8	34	18.5	83	24	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 CORVALLIS WINTER BARLEY NURSERY - CORVALLIS, OR

Table 41

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)				
3864	ORWB1 1 88AB536-B	6	26.9	48.0	49	81.9	1.9	1	9.7	5.19	54.7	109	64.8	78	27	8
3865	ORWB1 7 KAB 18	6	23.7	20.2	63	80.1	1.8	2	9.3	4.88	56.0	101	56.3	46	30	5
3866	ORWB1 8 KAB 37	6	29.3	69.3	68	83.5	n.d.	3	8.7	4.44	52.9	62	53.3	182	27	8
3867	ORWB1 9 KAB 43	6	28.1	59.6	46	81.1	1.8	1	10.5	5.11	52.8	99	70.4	49	29	6
3868	ORWB1 10 KAB 47	6	24.4	56.7	52	82.6	1.8	1	10.3	5.32	52.6	85	75.2	66	23	15
3869	ORWB1 11 KAB 50	6	26.9	43.9	68	81.9	1.6	1	9.5	4.83	52.1	77	59.8	123	35	2
3870	ORWB1 12 KAB 51	6	30.2	78.7	67	82.5	1.8	1	8.5	4.12	51.3	65	52.8	80	36	1
3871	ORWB1 14 KAB 65	6	30.5	66.4	68	83.3	1.8	2	8.2	4.37	54.6	85	51.1	133	34	4
3872	ORWB1 15 KAB 68	6	26.1	34.0	63	81.8	1.6	1	9.3	4.57	51.0	85	55.6	115	28	7
3873	ORWB1 16 STAB 7	6	24.6	43.0	51	81.6	1.9	1	10.0	5.07	55.3	105	68.2	56	27	8
3875	ORWB1 17 STAB 33	6	28.9	57.7	59	81.6	1.8	1	8.0	4.12	52.5	71	50.8	35	26	12
3876	ORWB1 18 STAB 34	6	25.7	29.9	64	80.8	1.8	1	8.9	4.66	53.4	92	60.5	50	27	8
3877	ORWB1 20 STAB 47	6	29.3	67.5	45	80.3	1.8	1	10.1	5.20	52.7	98	64.1	37	26	12
3878	ORWB1 21 STAB 64	6	31.5	54.1	56	81.6	n.d.	3	8.3	3.75	45.8	73	41.4	122	35	2
3879	ORWB1 24 STAB 113	6	27.0	49.7	67	82.5	1.5	1	8.4	4.39	57.6	72	53.9	22	24	14
3874	MOREX MALT CHECK	6	30.2	69.5	74	80.6	1.6	1	12.4	6.10	50.5	137	68.3	62	33	
Minima			23.7	20.2	45	80.1	1.5		8.0	3.75	45.8	62	41.4	22	23	
Maxima			31.5	78.7	68	83.5	1.9		10.5	5.32	57.6	109	75.2	182	36	
Means			27.5	51.9	59	81.8	1.8		9.2	4.67	53.0	85	58.5	80	29	
Standard Deviations			2.4	16.0	9	1.0	0.1		0.8	0.47	2.7	15	8.8	46	4	
Coefficients of Variation			8.7	30.8	14	1.2	6.2		9.0	10.02	5.1	17	15.1	58	14	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 PULLMAN WINTER BARLEY NURSERY - PULLMAN, WA

Table 42

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (ppm)	glucan	Quality	Score	Rank
3880	ORWB1 1 88AB536-B	6	32.4	87.4	65	84.7	2.1	1	12.0	6.23	53.6	146	62.3	187	42	6
3881	ORWB1 7 KAB 18	6	28.6	74.4	75	84.9	1.5	1	9.3	4.61	53.5	90	59.5	79	36	13
3882	ORWB1 8 KAB 37	6	32.8	87.1	57	84.4	2.0	1	10.4	5.04	51.8	71	57.1	369	38	10
3883	ORWB1 9 KAB 43	6	34.2	90.3	62	83.0	2.7	1	13.0	6.55	50.8	120	66.9	107	34	16
3884	ORWB1 10 KAB 47	6	30.3	85.4	60	84.2	1.9	1	12.4	5.86	49.3	104	67.7	144	41	8
3885	ORWB1 11 KAB 50	6	33.0	87.8	61	83.0	1.6	1	11.7	5.08	44.0	101	59.7	353	48	2
3886	ORWB1 12 KAB 51	6	37.3	96.7	60	83.6	1.9	1	11.7	5.30	46.2	117	58.6	251	46	4
3887	ORWB1 14 KAB 65	6	33.8	91.1	70	84.7	n.d.	3	9.5	4.63	50.9	91	53.6	309	39	9
3888	ORWB1 15 KAB 68	6	32.1	78.5	69	83.3	1.6	1	11.0	4.61	43.6	110	55.8	292	51	1
3889	ORWB1 16 STAB 7	6	32.1	85.9	65	82.8	1.8	1	11.7	5.31	46.2	123	66.5	166	38	10
3890	ORWB1 17 STAB 33	6	35.0	92.1	63	83.7	2.1	1	9.8	4.64	50.6	78	54.8	125	48	2
3891	ORWB1 18 STAB 34	6	32.7	79.0	66	82.7	1.9	1	10.1	4.70	48.2	87	66.4	182	37	12
3892	ORWB1 20 STAB 47	6	34.3	89.8	61	82.9	2.4	1	11.9	5.85	49.6	117	66.1	139	42	6
3893	ORWB1 21 STAB 64	6	32.4	79.7	66	84.1	n.d.	3	9.6	4.21	47.1	88	52.1	271	35	15
3894	ORWB1 24 STAB 113	6	32.0	90.1	71	84.8	1.8	1	9.8	4.84	52.1	93	58.1	85	45	5
3895	ORWB1 27 STAB 171	6	31.5	90.5	62	85.0	2.4	2	11.6	5.62	50.4	65	65.8	71	36	13
3896	MOREX MALT CHECK	6	30.4	72.0	73	80.8	1.5	1	12.4	5.96	50.0	146	71.5	67	42	
Minima			28.6	74.4	57	82.7	1.5		9.3	4.21	43.6	65	52.1	71	34	
Maxima			37.3	96.7	75	85.0	2.7		13.0	6.55	53.6	146	67.7	369	51	
Means			32.8	86.6	65	83.9	2.0		11.0	5.19	49.2	100	60.7	196	41	
Standard Deviations			2.0	5.9	5	0.8	0.3		1.2	0.67	3.1	21	5.3	99	5	
Coefficients of Variation			6.0	6.8	7	1.0	16.8		10.8	12.84	6.3	21	8.8	51	13	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 SPRING BARLEY NURSERIES FROM ABERDEEN, TULE LAKE, PENDLETON AND CORVALLIS

Table 43

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)			(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
3897	ORSB 83 SAL 2	2	40.4	84.7	65	74.6	2.0	1	19.1	6.94	36.0	200	81.9	231	9	53
3898	ORSB 84 SAL 3	2	41.2	84.0	68	73.8	1.9	1	19.5	6.81	35.3	206	81.7	280	9	53
3899	ORSB 85 SAL 8	2	41.9	84.9	65	73.7	1.9	1	19.6	6.84	35.3	201	84.0	281	9	53
3900	ORSB 86 SAL 10	2	42.8	89.2	66	74.0	2.0	1	19.4	6.89	35.2	200	86.4	251	13	44
3901	ORSB 87 HARRINGTON	2	36.8	84.6	68	78.6	1.6	1	18.1	6.93	40.0	179	83.2	354	6	61
3902	ORSB 88 SAL 14	2	40.5	83.6	63	72.9	2.0	1	20.3	7.15	34.7	228	96.6	272	9	53
3903	ORSB 89 SAL 15	2	42.7	87.2	66	74.7	1.8	1	19.1	6.65	34.1	215	92.6	298	13	44
3904	ORSB 90 SAL+AJO 1	2	40.2	86.3	62	72.7	2.2	1	21.0	7.23	35.0	237	101.4	280	12	48
3905	ORSB 91 SAL+AJO 2	2	39.4	81.4	63	74.3	2.2	1	19.7	7.17	36.0	224	95.0	231	7	58
3906	ORSB 92 SAL+AJO 5	2	38.1	74.4	62	72.2	2.1	1	20.5	7.28	35.0	237	97.0	255	7	58
3907	ORSB 93 SAL+AJO 8	2	39.6	82.4	64	72.3	2.5	1	20.1	7.43	37.4	231	97.9	209	7	58
3908	ORSB 94 SAL+AJO 10	2	42.9	88.8	65	72.7	2.0	1	20.0	7.05	35.8	238	93.3	317	10	52
3909	ORSSB 95 BCD 47	2	41.1	82.7	68	77.5	1.8	1	16.7	6.74	41.3	205	91.6	134	18	37
3910	ORSB 96 AJO+OPS 1	2	42.8	91.8	68	72.6	1.7	1	20.8	7.07	34.4	218	73.0	528	12	48
3911	ORSB 97 AMAGI-NIJO	2	38.2	94.6	74	72.8	1.7	1	20.4	7.16	35.0	216	57.6	522	9	53
3912	ORSB 98 KINUYATAKA	2	36.3	91.7	71	72.6	1.6	1	20.1	6.87	34.6	201	54.7	557	11	50
3913	ORSB 99 NASU-NIJO	2	38.6	92.3	78	77.0	1.4	1	19.0	6.04	32.4	177	54.9	754	13	44
3914	ORSB 100 KINUCA-NIJO	2	35.8	82.0	78	75.4	1.5	1	20.6	6.30	31.3	208	60.6	450	2	62
3915	ORSB 105 GARNET	2	40.1	90.6	72	77.4	1.8	1	17.9	7.09	38.7	191	79.2	345	11	50
3916	ORSB 83 SAL 2	2	47.4	96.1	70	79.6	1.5	1	14.7	6.13	43.7	164	86.5	120	31	11
3917	ORSB 84 SAL 3	2	46.2	95.0	67	80.0	1.6	1	14.5	6.25	45.5	141	81.8	134	31	11
3919	ORSB 85 SAL 8	2	46.8	95.7	67	80.5	1.4	1	14.3	6.15	43.4	155	86.5	102	31	11
3920	ORSB 86 SAL 10	2	47.7	96.3	68	80.4	1.5	1	13.9	6.06	44.1	137	82.4	115	35	6
3921	ORSB 87 HARRINGTON	2	38.7	80.7	70	80.6	1.3	1	14.7	6.42	44.8	128	68.0	341	23	33
3922	ORSB 88 SAL 14	2	46.2	95.3	65	79.8	1.5	1	14.5	6.29	43.9	144	82.9	113	31	11
3923	ORSB 89 SAL 15	2	47.3	97.2	62	80.6	1.6	1	14.4	6.27	45.8	145	84.0	129	31	11
3924	ORSB 90 SAL+AJO 1	2	46.2	96.7	72	80.8	1.6	1	13.8	6.23	46.5	162	85.7	175	22	34
3925	ORSB 91 SAL+AJO 2	2	47.3	97.4	67	81.5	1.6	1	13.5	6.17	49.1	136	84.7	116	38	3
3926	ORSB 92 SAL+AJO 5	2	46.9	96.6	68	80.9	1.5	1	13.2	6.10	46.7	135	81.6	122	35	6
3927	ORSB 93 SAL+AJO 8	2	47.0	96.9	67	77.5	1.4	1	13.9	5.75	42.9	143	83.2	117	27	22

Table 43

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
3928	ORSB 94 SAL+AJP 10	2	47.0	96.6	67	80.5	1.5	1	13.5	6.11	45.4	136	81.3	102	40	2
3929	ORSB 87 HARRINGTON	2	41.2	88.4	69	80.4	1.2	1	14.0	6.35	47.4	141	71.5	344	16	39
3930	ORSB 96 AJO+OPS 1	2	47.1	97.0	66	78.4	1.2	1	14.9	5.90	42.0	151	60.2	373	24	29
3931	ORSB 97 AMAGI-NIJO	2	40.2	93.9	75	76.6	1.2	1	16.0	5.40	34.2	140	41.5	538	25	25
3932	ORSB 98 KINUYATAKA	2	37.1	94.1	74	74.9	1.9	2	17.0	5.32	32.1	148	38.6	586	13	44
3933	ORSB 99 NASU-NIJO	2	45.7	97.8	77	79.5	1.3	2	16.1	5.46	35.6	141	45.6	441	28	20
3934	ORSB 100 KINUCA-NIJO	2	44.1	96.9	83	78.7	1.4	1	16.4	5.51	34.5	158	51.4	260	26	24
3935	ORSB 105 GARNET	2	49.2	98.1	73	81.1	1.7	1	14.4	6.63	48.9	148	70.8	212	25	25
3936	ORSB 103 B2L20-36-1	6	34.9	85.0	81	79.3	1.7	2	13.7	5.54	40.5	146	57.3	383	42	1
3937	ORSB 104 B2L20-42-2	6	35.5	87.8	76	78.1	1.8	2	14.1	5.39	39.9	129	52.6	590	25	25
3938	ORSB 103 B2L20-36-1	6	35.0	86.3	66	74.6	1.9	1	17.4	6.90	40.0	199	69.4	403	17	38
3940	ORSB 104 B2L20-42-2	6	36.9	92.7	73	76.1	1.8	1	17.1	5.81	35.0	166	61.2	408	19	36
3941	ORSB 97 AMAGI-NIJO	2	35.2	85.1	76	74.7	1.5	1	15.7	5.84	37.3	186	51.0	262	15	41
3942	ORSB 98 KINUYATAKA	2	33.8	86.5	73	74.3	2.0	2	16.3	5.52	33.9	175	47.9	323	14	42
3943	ORSB 99 NASU-NIJO	2	40.1	92.4	76	77.1	1.9	2	16.2	5.53	34.2	154	44.3	509	20	35
3944	ORSB 100 KINUCA-NIJO	2	39.3	86.8	79	77.5	2.0	2	16.1	5.48	34.3	171	53.0	224	16	39
3945	WBFAC 1 88AB 536	6	31.2	*62.9	74	75.6	n.d.	3	15.7	5.40	34.9	238	59.0	162	14	42
3946	WBFAC 2 STAB 7	6	34.2	81.2	77	77.6	n.d.	3	14.6	4.93	34.1	217	52.7	261	27	22
3947	WBFAC 3 STAB 33	6	40.7	91.6	65	77.3	n.d.	3	14.3	4.82	34.7	168	45.3	400	28	20
3948	WBFAC 4 STAB 34	6	37.0	71.5	75	78.1	n.d.	3	13.8	4.91	36.0	149	52.8	468	38	3
3949	WBFAC 5 STAB 47	6	38.8	92.5	66	76.6	n.d.	3	15.7	5.72	37.6	171	59.8	145	24	29
3950	WBFAC 6 STAB 64	6	39.7	90.2	69	79.1	n.d.	3	12.4	3.96	32.7	138	41.2	438	35	6
3951	WBFAC 7 STAB 113	6	37.5	92.9	71	77.8	n.d.	3	13.4	4.82	36.5	158	44.6	206	36	5
3952	WBFAC 8 KAB 43	6	38.9	96.0	63	77.8	n.d.	3	15.5	5.63	36.8	180	59.8	126	24	29
3953	WBFAC 9 KAB 47	6	31.6	80.7	72	78.5	n.d.	3	14.8	5.24	36.1	169	57.7	161	31	11
3954	WBFAC 10 KAB 50	6	37.8	89.9	73	77.8	n.d.	3	14.5	5.03	35.8	143	49.6	428	31	11
3955	WBFAC 11 KAB 51	6	40.3	95.4	66	76.4	n.d.	3	15.4	5.03	33.3	156	48.4	381	31	11
3956	97AB347	6	37.8	93.5	75	81.0	n.d.	3	7.9	3.75	52.3	61	38.3	355	25	25
3957	WA 1614-95	6	31.7	83.5	67	77.3	n.d.	3	7.6	3.93	56.3	54	45.2	199	24	29
3958	JARI'S BYDV 1 BULK 1	6	34.7	81.2	64	82.7	1.9	1	7.3	4.01	58.6	50	62.8	63	30	19

Table 43

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank		
3959	JARI'S BYDV 2 BULK 2	6	35.0	81.9	61	82.8	1.8	1	7.7	4.18	56.2	50	63.2	133	34	9
3960	JARI'S BYDV 3 BULK 3	6	34.6	78.8	68	82.6	1.8	1	7.5	4.00	59.1	50	71.4	113	34	9
3896	MOREX MALT CHECK	6	30.4	72.0	73	80.8	1.5	1	12.4	5.96	50.0	146	71.5	67	42	
3918	HARRINGTON MALT CHECK	2	39.4	94.2	77	82.5	1.3	1	11.8	5.55	49.5	114	75.1	161	42	
3939	MOREX MALT CHECK	6	31.2	71.8	74	79.7	1.7	1	12.6	6.11	52.1	152	71.6	76	31	
3961	MOREX MALT CHECK	6	30.9	71.8	70	79.5	1.7	1	13.1	6.09	50.1	142	72.4	58	31	
Minima			31.2	71.5	61	72.2	1.2		7.3	3.75	31.3	50	38.3	63	2	
Maxima			49.2	98.1	83	82.8	2.5		21.0	7.43	59.1	238	101.4	754	42	
Means			40.2	89.3	70	77.3	1.7		15.7	5.93	39.7	165	68.1	292	22	
Standard Deviations			4.6	6.4	5	3.0	0.3		3.4	0.96	6.9	47	18.0	155	10	
Coefficients of Variation			11.6	7.2	8	3.8	16.8		21.8	16.12	17.3	28	26.5	53	47	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by P. Hayes and A. Corey, Oregon State University - Corvallis

2000 STATE UNIFORM NURSERY - ROYAL SLOPE, WA

Table 44

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)			
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)				Score	Rank
1	BARONESSE	2	38.5	78.1	68	72.8	n.d.	3	15.3	3.92	26.1	81	43.5	654	9	31
2	WA 9504-94	2	39.3	82.5	63	76.1	1.3	1	14.6	4.37	30.0	126	41.3	536	18	16
3	HARRINGTON	2	41.1	84.0	71	77.9	1.6	1	15.0	5.67	39.0	129	67.2	483	16	19
4	BANCROFT	2	39.3	76.2	70	77.3	1.3	1	15.1	5.22	35.5	139	57.0	507	11	27
5	ORCA	2	46.8	96.4	59	78.2	2.3	2	15.0	6.14	41.2	148	76.5	156	23	9
6	BCD 47	2	38.2	60.5	69	73.9	1.7	1	16.7	5.59	34.5	146	91.4	361	7	34
7	CREST	2	36.7	71.4	64	76.0	1.7	1	15.3	5.84	38.2	126	78.0	508	12	24
8	XENA	2	44.0	87.6	66	75.7	1.1	1	14.5	4.07	28.8	88	48.3	537	17	18
9	JERSEY	2	37.4	77.8	64	75.8	1.2	1	14.6	4.20	29.7	122	55.9	185	12	24
10	MOREX	2	34.0	75.0	76	75.2	1.2	1	15.8	5.02	32.0	180	54.3	565	13	21
11	VALIER	2	36.7	75.3	70	77.5	1.1	1	14.1	4.60	34.5	106	64.7	458	13	21
12	H3869224	6	36.8	80.5	68	75.8	1.3	1	15.4	5.05	34.3	134	68.1	710	23	9
13	PONGO	2	36.9	80.4	67	73.3	1.3	1	14.6	3.70	26.1	90	40.3	511	9	31
14	MENTOR	2	35.1	83.1	65	74.9	1.3	1	15.1	4.19	27.9	103	44.5	375	13	21
15	WA 7942-96	2	*54.4	91.7	75	78.2	1.7	1	14.6	5.64	39.4	122	60.2	620	26	7
16	WA 11832-95	2	39.6	78.4	75	75.9	1.2	1	14.2	4.29	31.4	74	45.5	685	11	27
17	WA 11801-95	2	41.8	85.6	73	78.8	1.5	1	12.4	4.66	39.6	94	57.7	403	30	2
18	WA 11825-95	2	39.1	75.6	73	76.5	1.3	1	13.7	4.29	33.2	70	45.5	477	11	27
19	WA 12953-95	2	38.8	83.9	75	77.1	1.4	1	12.7	4.91	38.6	92	55.4	397	16	19
20	WA 12223-95	2	43.5	93.7	76	78.6	1.2	1	13.0	4.52	35.9	91	57.4	397	28	5
21	WA 8682-96	2	40.2	82.6	70	77.7	1.3	1	13.2	4.36	34.5	93	57.2	420	11	27
22	WA 8709-96	2	37.9	81.2	70	77.1	1.2	1	12.2	3.60	31.3	36	44.9	563	19	15
23	WA 10147-96	2	41.2	89.3	67	77.8	n.d.	3	11.5	3.41	30.5	44	38.7	550	21	12
25	WA10138-96	2	44.9	87.5	75	77.0	2.1	2	12.6	3.63	30.3	56	40.5	414	21	12
26	WA 8710-96	2	42.7	86.1	72	76.0	1.5	2	13.1	3.69	29.2	47	42.9	508	21	12
27	WA 8831-96	2	40.3	84.9	69	76.5	1.3	2	14.1	4.36	32.4	88	52.2	652	9	31
28	WA 8718-96	2	42.8	89.6	67	76.8	1.9	2	11.9	3.47	30.2	49	40.7	531	26	7
29	CA 803803	2	40.3	88.4	66	80.9	1.5	2	11.4	3.97	36.5	77	53.6	313	29	4
30	98NZ533	2	42.2	90.7	77	79.6	1.6	2	11.8	4.30	37.0	54	56.8	385	28	5
31	98NZ015	2	40.6	80.7	63	75.8	2.6	2	13.6	4.00	30.6	73	41.7	484	12	24

Table 44

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	Alpha-	Beta-	Overall			
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(°ASBC)	DP (20°DU)	amylase (ppm)	glucan		
32	98NZ532	2	37.7	76.0	81	79.3	2.1	2	12.5	4.98	42.7	52	79.1	218	30	2
33	98NZ223	2	37.9	73.7	72	78.8	1.7	2	11.9	4.14	35.9	82	62.2	254	18	16
34	98NZ234	2	41.5	86.7	76	78.2	2.3	2	13.6	5.08	37.3	94	69.6	269	22	11
35	98NZ226	2	43.6	92.6	78	79.9	2.3	2	12.6	5.05	42.1	93	73.8	187	38	1
24	HARRINGTON MALT CHECK	2	36.3	88.7	63	78.4	2.1	1	12.3	4.65	38.5	83	62.3	517	26	
			Minima	34.0	60.5	59	72.8	1.1	11.4	3.41	26.1	36	38.7	156	7	
			Maxima	46.8	96.4	81	80.9	2.6	16.7	6.14	42.7	180	91.4	710	38	
			Means	39.9	82.6	70	77.0	1.6	13.8	4.53	34.0	94	56.1	449	18	
			Standard Deviations	2.9	7.4	5	1.8	0.4	1.4	0.72	4.5	34	13.4	146	8	
			Coefficients of Variation	7.3	8.9	7	2.4	26.6	10.0	15.90	13.3	36	23.9	33	42	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 PRELIMINARY STATE NURSERY - ROYAL SLOPE, WA

Table 45

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
51	BARONESSE	2	42.9	90.7	67	74.3	1.3	2	14.7	3.97	27.1	99	46.7	548	22	8
52	HARRINGTON	2	42.0	90.7	74	75.6	1.2	2	14.7	4.35	30.5	114	53.2	571	21	10
53	MOREX	6	37.1	82.5	76	74.4	1.1	2	16.2	4.52	28.5	*180	48.7	574	18	17
54	WA8792-96	2	43.8	89.3	68	74.8	1.2	2	14.6	3.91	27.5	79	45.6	555	16	24
55	WA10144-96	2	41.5	88.5	70	74.6	2.0	2	13.8	3.20	24.0	55	33.5	694	8	40
56	WA14528-97	2	42.7	87.0	73	77.2	1.1	2	14.3	4.13	30.4	126	60.9	565	16	24
58	WA8769-96	2	42.2	84.1	70	73.0	1.7	2	15.1	3.75	25.9	76	36.3	671	10	37
59	WA8759-96	2	39.9	86.1	72	74.2	1.8	2	14.9	3.86	26.9	62	38.9	518	10	37
60	WA9221-96	2	42.6	86.0	75	74.7	1.3	2	14.3	3.93	29.0	86	36.7	583	13	33
61	WA10112-96	2	48.6	92.0	67	72.1	n.d.	3	14.8	3.70	25.6	71	38.4	790	14	30
62	WA9154-96	2	44.4	87.4	64	72.0	1.6	2	15.0	3.76	25.4	108	36.0	790	17	20
63	WA7908-96	6	*54.3	91.6	76	77.1	1.4	1	14.3	5.25	37.8	150	56.8	690	30	3
64	WA7478-97	2	43.8	86.5	61	74.0	n.d.	3	14.9	3.83	26.7	83	37.7	831	12	36
65	WA8601-97	2	45.4	88.1	65	74.2	1.5	2	14.3	4.17	30.0	76	41.9	695	16	24
66	WA9970-97	2	39.3	81.5	69	73.4	n.d.	3	14.8	3.65	25.9	79	44.7	601	9	39
67	WA13898-97	2	42.9	90.0	63	72.1	n.d.	3	14.7	3.73	25.5	76	41.2	717	17	20
68	WA7026-97	2	43.8	90.7	65	74.1	1.4	1	15.5	4.34	28.6	77	53.5	820	16	24
69	WA10067-97	2	40.8	82.8	75	74.9	1.1	1	14.8	4.04	27.8	115	41.7	725	20	13
70	WA9904-97	2	39.2	81.9	68	72.5	1.0	1	15.8	4.03	25.9	117	41.6	840	18	17
71	WA10903-97	2	44.3	86.2	64	70.9	1.4	1	14.7	3.60	25.4	80	37.0	830	14	30
72	WA10497-97	2	41.6	86.9	74	76.0	1.2	1	14.2	4.34	31.5	99	43.8	738	20	13
73	WA860897	2	47.9	95.4	62	72.8	1.9	2	14.3	3.64	25.7	76	42.0	634	18	17
74	WA12571-97	2	45.2	86.6	65	74.8	1.4	1	15.6	4.43	29.7	116	50.0	676	28	5
75	WA10718-97	2	42.9	84.0	77	74.4	1.1	1	14.9	4.72	31.9	136	50.6	555	22	8
76	WA9502-97	2	42.4	87.4	71	76.5	1.1	1	13.7	4.38	34.0	117	50.3	613	21	10
77	WA8674-96	2	41.9	88.5	75	76.2	1.5	2	14.0	3.81	28.3	104	45.8	742	19	15
79	WA7018-97	2	45.1	95.1	72	73.6	n.d.	3	15.1	3.86	26.8	84	42.2	644	17	20
80	WA12554-97	2	39.1	81.6	73	73.1	1.1	2	15.0	3.76	25.4	108	40.1	817	14	30
81	WA11046-97	2	40.8	87.0	72	75.2	1.7	2	14.2	4.03	29.2	109	41.4	646	19	15
82	WA14574-97	2	39.3	75.9	68	73.2	1.1	1	14.9	4.10	28.4	93	50.6	694	8	40

Table 45

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight 6/64"	(mg)	(%)	(Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	
83	WA14075-97	2	42.9	90.5	73	74.7	1.1	1	14.2	3.71	27.2	82	38.6	755	16	24
84	WA9960-97	2	43.2	85.3	69	75.5	1.3	1	13.7	4.09	30.4	78	43.9	653	17	20
85	WA8478-97	2	43.1	85.8	66	73.4	n.d.	3	13.3	3.35	26.1	55	33.7	731	13	33
86	WA11618-97	2	40.0	76.4	64	73.3	n.d.	3	13.4	3.53	28.1	73	37.8	606	13	33
87	WA18009-94	6	35.9	*71.8	80	76.2	1.8	2	13.8	4.50	34.5	120	46.6	634	21	10
88	WA9971-97	2	42.0	88.1	72	76.0	n.d.	3	14.1	4.24	31.0	72	43.7	689	15	29
89	WA13217-97	6	39.3	87.2	72	74.3	1.9	1	13.8	5.03	37.0	108	53.5	518	31	2
90	WA13782-97	6	42.6	91.3	72	77.6	2.0	1	13.3	5.74	44.5	123	66.9	424	25	6
91	WA13291-97	6	42.7	92.1	77	76.2	1.8	2	13.4	5.28	40.5	137	58.6	378	36	1
92	98NZ055	6	40.4	87.8	72	75.3	n.d.	3	13.0	4.70	36.9	95	47.3	522	29	4
93	98NZ050	6	40.5	90.3	75	77.4	1.9	1	12.9	5.66	44.6	106	69.1	462	25	6
57	HARRINGTON MALT CHECK	2	36.4	88.8	60	79.1	2.1	2	12.3	4.70	39.7	97	59.8	445	29	
78	HARRINGTON MALT CHECK	2	36.6	89.8	63	78.7	1.9	1	12.3	4.94	42.6	93	51.4	400	35	
Minima			35.9	75.9	61	70.9	1.0		12.9	3.20	24.0	55	33.5	378	8	
Maxima			48.6	95.4	80	77.6	2.0		16.2	5.74	44.6	150	69.1	840	36	
Means			42.2	87.2	70	74.5	1.4		14.4	4.16	29.9	95	45.5	652	18	
Standard Deviations			2.6	4.2	5	1.6	0.3		0.8	0.58	5.1	23	8.5	114	6	
Coefficients of Variation			6.1	4.8	7	2.1	22.3		5.2	13.98	17.0	24	18.6	18	35	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 MALTING BARLEY NURSERY - ROYAL SLOPE, WA

Table 46

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort			Alpha-	Beta-	Overall			
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)		
94	HARRINGTON	2	41.3	82.2	75	78.3	1.3	1	12.6	5.01	41.1	117	64.8	446	34	3
95	BARONESSE	2	47.3	87.6	73	75.2	n.d.	3	12.8	3.65	28.7	70	36.4	631	17	18
96	GALENA	2	45.6	91.4	73	78.1	1.6	2	12.8	3.80	31.4	86	36.0	561	24	12
97	C 32	2	43.2	87.6	79	78.2	n.d.	3	11.5	3.44	31.4	85	33.3	587	22	16
99	MERIT	2	46.9	88.1	76	80.0	1.4	1	13.0	5.07	40.8	150	74.5	337	34	3
100	6B93-2978	6	39.6	92.7	75	77.2	1.6	1	15.1	6.24	42.9	174	63.1	559	17	18
101	MOREX	6	40.5	88.6	73	75.2	1.3	1	15.9	4.98	31.8	168	48.4	651	30	7
102	ALEXIS	2	45.9	91.3	67	77.6	1.3	1	13.3	3.76	28.6	76	35.8	371	21	17
103	PONGO	2	42.7	90.4	72	74.5	n.d.	3	12.7	3.41	26.9	83	34.5	688	15	20
104	SABEL	2	47.4	95.6	63	76.8	1.2	1	13.8	3.86	28.5	108	42.1	572	23	14
105	LUZON	2	43.9	89.5	65	77.5	1.2	1	14.1	3.97	28.8	115	40.6	510	24	12
106	ASTORIA	2	44.3	89.5	70	77.6	1.5	2	12.4	3.78	31.2	92	36.9	532	23	14
107	RICARDA	2	43.2	93.5	57	79.5	n.d.	3	13.4	4.10	32.1	55	36.9	220	29	8
108	DECANTER	2	40.8	86.0	57	76.5	1.4	1	13.1	4.69	38.2	106	59.9	249	28	9
109	PASADENNA	2	44.8	93.9	53	78.8	1.3	1	13.8	3.99	29.3	99	45.0	414	27	10
110	ASPEN	2	45.4	93.8	66	79.4	1.2	1	12.7	3.69	29.4	97	37.0	433	32	5
111	VISKOSA	2	47.9	90.2	67	78.6	1.4	1	11.8	4.07	36.5	86	46.3	247	36	1
112	CENTURY	2	44.1	85.7	66	78.4	1.3	1	12.2	3.71	30.7	96	36.8	494	32	5
113	LUX	2	43.5	93.7	70	78.8	1.3	1	13.0	3.91	31.8	130	40.6	271	35	2
114	SCARLETT	2	46.4	97.9	67	74.4	1.7	2	13.4	3.98	30.3	95	44.2	577	27	10
98	HARRINGTON MALT CHECK	2	35.4	89.3	59	79.5	2.0	2	12.4	4.98	40.2	87	52.1	398	37	
Minima			39.6	82.2	53	74.4	1.2		11.5	3.41	26.9	55	33.3	220	15	
Maxima			47.9	97.9	79	80.0	1.7		15.9	6.24	42.9	174	74.5	688	36	
Means			44.2	90.5	68	77.5	1.4		13.2	4.16	32.5	104	44.6	467	27	
Standard Deviations			2.4	3.8	7	1.7	0.1		1.0	0.70	4.7	31	11.7	145	6	
Coefficients of Variation			5.5	4.2	10	2.1	10.3		7.8	16.86	14.5	30	26.3	31	24	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 P-ANT 6 - ROW - ROYAL SLOPE, WA

Table 47

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	S/T	DP	amylase	glucan	Score	Rank	
115	BARONESSE	2	41.7	81.3	72	74.5	n.d.	3	13.9	3.87	27.9	80	41.0	575	11	30
116	MOREX	6	34.5	*63.3	72	75.7	1.3	1	14.9	4.88	32.9	153	55.4	488	25	18
117	99NZ007	6	43.1	88.2	71	75.8	2.3	1	14.3	5.95	43.9	139	72.3	482	24	22
118	99NZ028	6	41.9	83.2	74	79.3	2.2	2	13.4	5.23	40.7	88	67.8	625	35	2
120	99NZ042	6	41.4	82.4	68	75.2	2.2	1	13.7	5.51	42.1	114	68.8	628	25	18
121	99NZ047	6	43.8	90.6	72	75.9	2.6	1	13.8	6.01	43.6	92	69.8	581	22	25
122	99NZ049	6	38.4	86.2	77	74.0	2.2	2	13.4	4.88	36.5	147	62.3	668	30	7
123	99NZ060	6	42.5	88.2	74	75.7	n.d.	3	14.1	5.31	38.7	115	55.6	749	17	28
124	99NZ065	6	39.0	73.0	75	74.3	n.d.	3	13.5	4.45	32.2	116	51.7	605	20	26
125	99NZ066	6	40.7	80.0	79	77.2	2.7	2	13.2	6.18	47.1	112	80.3	442	16	29
126	99NZ068	6	42.7	86.4	78	77.5	2.4	2	13.0	4.89	39.7	90	64.8	548	23	23
127	99NZ076	6	43.3	86.8	80	75.1	2.1	2	13.2	4.87	37.6	120	59.3	887	27	13
128	99NZ090	6	40.2	83.9	69	75.9	2.2	2	13.6	5.17	38.3	110	63.8	712	23	23
129	99NZ092	6	41.3	85.1	75	76.8	2.3	2	13.3	5.26	40.4	98	76.5	572	28	12
130	99NZ095	6	40.9	88.6	72	74.8	1.9	2	13.7	5.07	36.6	132	61.7	656	27	13
131	99NZ096	6	44.6	90.2	74	76.7	2.1	1	13.4	5.50	41.2	100	71.6	816	25	18
132	99NZ102	6	41.6	87.8	69	76.4	2.2	1	13.6	5.19	40.2	128	62.3	474	29	9
133	99NZ104	6	40.9	78.7	71	77.0	2.0	1	13.7	5.62	41.8	131	74.8	433	29	9
134	99NZ125	6	39.0	87.7	66	78.5	n.d.	3	13.4	4.99	37.4	146	60.9	338	33	4
135	99NZ138	6	36.9	77.2	73	74.9	2.0	1	13.9	4.85	35.9	135	63.0	178	31	6
136	99NZ157	6	44.9	93.7	71	75.8	2.0	2	14.1	5.39	37.6	150	59.1	668	25	18
137	99NZ221	6	39.4	89.5	75	75.4	2.3	2	13.9	5.27	39.5	133	60.5	325	27	13
138	99NZ237	6	42.1	91.2	75	77.1	2.4	1	13.7	6.23	47.2	152	79.5	248	27	13
139	99NZ241	6	40.3	85.4	72	75.4	2.1	1	13.7	5.27	40.1	165	68.1	403	33	4
140	99NZ262	6	40.0	85.8	74	72.8	2.2	2	14.4	4.87	35.1	132	52.6	435	29	9
141	99NZ270	6	37.1	72.5	70	75.3	2.3	1	13.9	5.68	42.1	120	69.0	231	26	17
143	99NZ293	6	38.1	85.5	71	74.3	2.3	2	13.9	5.35	39.0	122	62.4	448	19	27
144	99NZ316	6	40.4	92.8	68	77.3	2.1	2	13.3	5.05	39.5	146	53.9	436	37	1
145	99NZ338	6	36.7	83.7	71	75.8	2.3	2	13.6	5.08	37.9	166	48.8	513	34	3
146	99NZ339	6	39.5	88.3	69	75.2	2.2	2	13.7	4.98	36.0	145	39.5	469	30	7

Table 47

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-						
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan	Quality	Overall
(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(%)	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank
119	MOREX MALT CHECK	6	31.1	70.0	71	79.6	2.0	1	12.2	5.88	49.3	127	74.1	106	36	
142	MOREX MALT CHECK	6	30.6	69.8	73	79.8	1.9	1	12.4	6.06	50.2	135	79.8	49	30	
Minima			34.5	72.5	66	72.8	1.3		13.0	3.87	27.9	80	39.5	178	11	
Maxima			44.9	93.7	80	79.3	2.7		14.9	6.23	47.2	166	80.3	887	37	
Means			40.6	85.3	73	75.9	2.2		13.7	5.23	39.0	126	62.6	521	26	
Standard Deviations			2.4	5.2	3	1.4	0.3		0.4	0.49	4.1	23	10.0	168	6	
Coefficients of Variation			6.0	6.1	5	1.8	11.6		2.9	9.41	10.4	18	16.1	32	22	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 P-ANT 2 - ROW NURSERY #1 - ROYAL SLOPE, WA

Table 48

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)			
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)				Score	Rank
147	BARONESSE	2	41.1	81.9	64	74.3	n.d.	3	13.3	3.91	29.9	72	41.0	598	16	19
148	HARRINGTON	2	40.2	81.1	72	78.8	1.3	1	13.0	5.51	41.5	125	71.2	421	30	5
149	99NZ354	2	42.5	85.0	71	77.3	1.6	1	13.9	5.08	36.4	108	56.7	292	24	13
150	99NZ355	2	43.0	84.9	75	79.3	1.6	1	13.2	5.19	40.2	82	74.9	238	27	10
151	99NZ361	2	47.8	93.5	72	79.8	2.1	1	13.5	5.80	42.3	93	64.0	224	35	3
152	99NZ413	2	35.7	*61.3	73	76.6	1.4	1	14.6	4.63	31.6	95	71.6	417	13	24
153	99NZ417	2	38.0	84.1	65	78.1	1.4	1	13.9	4.51	33.9	94	59.8	458	13	24
154	99NZ426	2	41.8	88.2	73	79.0	1.5	1	13.7	4.42	33.1	82	49.0	288	30	5
155	99NZ433	2	43.5	81.1	76	78.1	1.5	1	14.1	4.95	35.6	101	61.2	491	22	14
156	99NZ437	2	40.0	81.1	71	79.0	1.6	1	13.0	4.81	36.5	98	50.8	350	28	7
157	99NZ438	2	44.1	85.7	73	79.2	1.9	1	13.4	5.55	41.8	82	65.5	388	27	10
158	99NZ443	2	45.2	86.8	72	78.1	1.4	1	13.5	4.05	30.6	106	39.6	401	22	14
159	99NZ445	2	42.6	85.1	74	78.7	1.6	1	13.8	4.78	34.1	94	44.1	397	28	7
160	99NZ446	2	41.3	78.1	68	77.0	1.4	1	15.0	4.21	29.6	105	66.7	427	10	27
161	99NZ450	2	43.0	82.5	72	77.6	1.5	1	13.9	4.85	35.0	69	48.9	531	21	17
163	99NZ451	2	44.4	79.7	66	76.8	1.4	1	13.2	4.35	32.9	109	57.0	542	16	19
164	99NZ452	2	40.7	81.2	73	77.0	1.5	1	13.8	4.15	31.7	98	39.6	600	14	23
165	99NZ471	2	40.1	85.1	68	77.7	1.4	1	13.6	3.75	28.8	101	43.8	352	20	18
166	99NZ481	2	38.1	79.0	67	75.7	2.0	3	14.3	4.12	29.1	105	38.0	488	10	27
167	99NZ483	2	42.2	78.7	66	75.4	1.5	2	13.8	3.90	27.9	95	41.6	533	13	24
168	99NZ492	2	40.7	91.3	70	79.2	1.7	1	14.0	5.48	39.4	138	69.4	312	22	14
169	99NZ493	2	39.6	94.6	72	79.8	1.4	1	13.2	4.47	35.8	118	56.4	235	38	2
170	99NZ505	2	39.9	84.8	68	80.2	1.7	1	12.7	5.41	42.6	126	73.4	269	34	4
171	99NZ523	2	45.1	94.3	71	80.6	1.6	1	12.4	4.88	40.4	132	64.6	260	48	1
172	99NZ528	2	44.1	92.4	70	78.9	1.6	2	12.9	3.86	31.3	77	42.3	488	27	10
173	99NZ533	2	42.4	88.8	74	78.5	1.6	1	12.4	3.89	32.2	73	39.4	611	28	7
174	99NZ538	2	34.8	71.6	68	77.2	1.9	2	12.9	4.29	33.6	94	54.4	396	10	27
175	99NZ563	2	37.8	75.2	70	76.3	1.4	1	14.1	3.83	27.0	75	42.2	622	9	30
176	99NZ569	2	41.1	76.7	68	73.9	1.4	1	13.3	3.83	29.5	80	37.0	640	15	21
177	99NZ571	2	41.4	78.5	72	76.6	1.5	1	13.2	3.78	28.8	90	38.5	682	15	21

Table 48

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	amylase	glucan	Quality		
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(%)	(°ASBC)	(20°DU)	Score		
162	HARRINGTON MALT CHECK	2	34.6	88.5	60	79.7	2.3	2	12.3	5.30	42.6	95	57.1	362	29
178	HARRINGTON MALT CHECK	2	34.8	90.0	64	79.6	2.1	2	11.9	5.33	45.7	93	51.2	463	35
Minima			34.8	71.6	64	73.9	1.3		12.4	3.75	27.0	69	37.0	224	9
Maxima			47.8	94.6	76	80.6	2.1		15.0	5.80	42.6	138	74.9	682	48
Means			41.4	83.8	70	77.8	1.6		13.5	4.54	34.1	97	53.4	432	22
Standard Deviations			2.8	5.8	3	1.7	0.2		0.6	0.62	4.7	18	12.5	134	10
Coefficients of Variation			6.8	6.9	4	2.1	13.1		4.4	13.64	13.8	19	23.4	31	43

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 P-ANT 2 - ROW NURSERY #2 - ROYAL SLOPE, WA

Table 49

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agrton)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
179	BARONNESSE	2	42.2	81.6	65	74.4	n.d.	3	13.5	3.74	27.8	73	37.1	502	14	10
180	HARRINGTON	2	41.2	74.7	77	77.6	1.2	2	14.0	5.09	38.5	122	72.2	455	19	6
181	99NZ574	2	36.5	55.3	67	73.9	1.3	2	15.1	4.13	27.9	90	40.6	473	8	17
182	99NZ576	2	36.8	59.0	63	75.7	1.4	2	13.6	3.89	28.0	82	39.1	492	5	20
183	99NZ577	2	33.7	59.3	70	75.2	1.3	2	14.5	4.16	28.9	105	45.0	482	12	13
184	99NZ579	2	35.5	72.1	63	75.3	1.4	2	14.6	4.00	27.2	96	44.2	465	12	13
185	99NZ583	2	38.7	82.7	72	76.9	1.3	2	13.7	3.93	29.1	80	39.0	507	7	19
186	99NZ584	2	36.3	72.3	64	75.3	1.4	2	14.3	3.67	26.1	94	39.1	587	5	20
187	99NZ586	2	34.6	61.6	65	76.9	1.3	2	13.9	3.89	29.4	88	45.2	471	8	17
188	99NZ587	2	35.9	77.4	68	75.2	1.6	2	14.1	3.44	25.2	89	35.6	585	5	20
189	99NZ688	2	39.3	94.6	78	77.8	*2.2	2	14.0	5.37	39.4	152	62.1	436	11	15
190	99NZ758	2	41.9	80.2	74	78.6	1.3	1	13.3	4.78	38.0	106	55.3	440	26	2
191	99NZ792	2	39.0	77.1	73	78.9	1.6	2	14.4	5.45	40.0	104	64.6	488	14	10
192	99NZ836	2	43.0	85.1	65	77.6	1.5	1	14.2	4.84	34.5	124	46.0	425	31	1
193	99NZ844	2	42.5	79.5	70	76.9	1.4	1	13.8	4.46	33.1	101	40.8	495	25	3
194	99NZ862	2	46.1	88.5	77	77.0	1.4	1	14.2	4.36	31.1	90	46.8	493	17	7
195	99NZ873	2	43.3	91.0	71	76.0	1.2	1	13.9	4.05	28.7	107	55.5	521	16	8
196	MERIT	2	41.0	80.5	69	77.6	1.5	1	15.0	5.26	35.9	165	69.4	426	9	16
197	6B-2978	2	37.7	87.2	76	77.7	1.4	1	14.6	5.73	41.0	185	63.6	502	13	12
198	MOREX	2	35.6	77.7	74	75.0	1.2	1	15.0	4.94	34.1	171	49.9	512	16	8
199	B2L20-36	2	36.4	85.5	72	76.0	1.4	2	15.0	5.07	34.6	136	49.7	529	22	5
200	BL20-42	2	37.2	89.1	73	76.1	1.5	2	14.7	4.70	32.4	128	45.3	532	25	3
201	HARRINGTON MALT CHECK	2	36.5	89.1	64	79.8	1.9	1	12.5	5.34	44.9	110	54.2	400	41	
Minima			33.7	55.3	63	73.9	1.2		13.3	3.44	25.2	73	35.6	425	5	
Maxima			46.1	94.6	78	78.9	1.6		15.1	5.73	41.0	185	72.2	587	31	
Means			38.8	77.8	70	76.4	1.4		14.2	4.50	32.3	113	49.4	492	15	
Standard Deviations			3.3	10.9	5	1.4	0.1		0.5	0.66	4.9	31	10.9	44	8	
Coefficients of Variation			8.6	14.0	7	1.8	8.4		3.7	14.58	15.1	28	22.1	9	52	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 SPRING YIELD NURSERY #1 - PULLMAN, WA

Table 50

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
658	BARONESSE	2	40.2	92.4	70	76.7	n.d.	3	11.8	3.57	31.6	85	39.3	254	26	17
659	HARRINGTON	2	41.7	94.6	63	80.0	1.3	1	12.7	4.93	40.9	117	63.5	181	45	2
660	MOREX	6	34.2	84.2	75	79.4	1.5	2	12.0	4.91	41.3	137	53.5	141	58	1
661	WA 9815-98	2	39.4	81.2	55	78.9	1.5	2	12.7	3.70	30.8	43	38.4	*1387	16	27
662	WA 7270-98	2	44.4	97.8	57	78.1	1.5	2	12.5	3.94	33.1	74	44.3	510	32	6
663	PFC 9215	2	44.3	98.9	56	75.8	1.5	2	13.9	3.75	27.1	72	38.6	739	15	28
664	WA 7425-98	2	43.7	96.6	62	78.2	1.3	1	14.0	4.72	34.5	102	42.7	543	34	5
665	WA 9122-98	2	46.4	96.8	55	78.0	n.d.	3	12.9	4.15	32.9	60	37.9	311	23	19
666	WA 9378-98	2	41.6	90.8	63	77.4	1.3	1	13.4	4.92	38.1	127	42.1	277	40	4
667	WA 9837-98	2	43.7	96.5	63	78.4	n.d.	3	11.1	3.52	31.4	52	35.8	424	28	12
668	WA 9386-98	2	40.7	92.5	56	77.1	1.3	1	12.7	4.23	34.5	102	44.5	312	27	14
669	CEV 95076	2	42.5	98.4	55	78.1	1.5	2	11.9	3.90	32.8	94	46.1	331	32	6
670	WA 7216-98	2	42.4	98.4	53	78.4	1.7	2	12.5	4.27	35.3	82	45.1	457	32	6
671	WA 9152-98	2	41.9	96.0	65	79.3	1.2	1	12.4	3.91	32.1	54	44.5	384	32	6
673	WA 9262-98	6	36.2	91.4	73	79.5	2.0	2	11.4	5.25	46.6	108	76.8	84	42	3
674	WA 7710-98	2	47.6	98.2	57	74.3	1.5	1	14.1	5.20	38.3	114	47.2	386	29	11
675	WA 7276-98	2	42.9	97.9	57	78.1	1.4	2	12.5	4.11	32.7	79	45.3	379	27	14
676	WA 7325-98	2	42.8	98.3	*39	75.8	1.4	2	14.1	4.38	32.1	91	51.9	425	15	28
677	WA 7158-98	2	42.7	96.8	63	77.8	1.5	1	12.9	4.39	35.4	84	58.2	626	17	26
678	EMB 43	2	36.0	80.9	53	75.1	1.2	2	14.3	3.84	27.7	108	42.7	360	12	30
679	WA 10317-98	2	44.0	98.2	64	75.4	1.2	1	14.2	4.22	30.3	146	45.1	562	19	24
680	WA 7153-98	2	45.0	98.5	63	75.7	n.d.	3	13.3	3.51	28.1	78	41.9	660	22	22
681	WA 7228-98	2	49.0	98.6	60	77.1	1.7	1	14.4	5.81	41.7	118	58.5	291	30	10
682	WA 10339-98	2	45.5	99.3	63	78.0	1.6	1	13.8	5.58	40.5	148	69.0	165	23	19
683	WA 7290-98	2	43.2	97.5	55	77.7	1.4	2	13.0	3.85	31.5	79	43.4	471	23	19
684	WA 7359-98	2	48.4	99.1	55	76.8	1.5	1	14.1	5.55	38.9	148	55.3	269	18	25
685	WA 7194-98	2	42.1	96.7	68	76.6	1.5	2	12.7	4.03	33.5	96	44.3	516	27	14
686	WA 10322-98	2	47.7	99.4	64	77.4	1.4	1	13.6	4.95	36.6	169	58.3	62	22	22
687	WA 10337-98	2	40.6	96.3	61	75.9	1.7	2	13.5	4.10	31.5	145	43.1	249	25	18
688	WA 7162-98	2	42.4	98.3	60	76.7	1.4	1	13.1	4.07	31.8	100	44.1	478	28	12

Table 50

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score
672	HARRINGTON MALT CHECK	2	35.8	86.8	66	80.4	1.9	1	12.0	5.60	46.7	95	57.5	302	25
Minima			34.2	80.9	53	74.3	1.2		11.1	3.51	27.1	43	35.8	62	12
Maxima			49.0	99.4	75	80.0	2.0		14.4	5.81	46.6	169	76.8	739	58
Means			42.8	95.4	61	77.4	1.5		13.0	4.38	34.5	100	48.0	374	27
Standard Deviations			3.4	5.1	6	1.4	0.2		0.9	0.65	4.6	32	9.7	169	10
Coefficients of Variation			8.0	5.3	10	1.8	13.3		6.9	14.87	13.3	32	20.1	45	36

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 SPRING YIELD NURSERY #2 - PULLMAN, WA

Table 51

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)			(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
689	BARONESSE	2	38.6	91.0	72	75.9	n.d.	3	11.7	3.61	32.2	87	39.4	203	24	24
690	HARRINGTON	2	38.9	92.5	69	80.1	1.3	1	11.6	5.00	44.4	110	68.1	173	48	2
691	MOREX	6	33.5	78.4	75	78.7	1.4	1	11.9	4.83	41.0	143	52.3	92	59	1
693	PFC 9216	2	43.6	98.5	53	75.7	1.9	2	12.5	3.76	30.1	86	36.8	500	20	25
694	WA 7346-98	2	42.1	96.6	63	77.8	1.8	1	13.7	5.51	41.0	96	50.8	261	31	15
695	WA 7326-98	2	43.6	96.4	66	80.3	1.7	1	12.4	5.40	46.0	87	61.0	198	40	8
696	WA 7305-98	2	44.9	97.5	65	79.1	1.7	1	12.2	5.67	48.6	87	69.7	218	32	14
697	WA 8010-98	2	41.8	89.6	65	76.3	1.5	1	13.5	4.75	34.7	152	47.2	263	31	15
698	WA 7308-98	2	45.1	97.7	62	79.8	1.7	1	12.4	5.26	44.3	88	59.3	157	40	8
699	WA 10290-98	2	48.6	98.8	54	75.3	n.d.	3	13.6	3.89	28.1	126	32.0	466	17	28
700	WA 7751-98	2	37.1	94.2	69	79.8	1.5	1	11.7	4.66	41.8	92	60.6	197	39	11
701	WA 8023-98	2	43.9	93.9	64	78.9	1.4	1	11.1	4.67	43.9	130	61.7	154	48	2
702	WA 7652-98	6	39.9	96.8	66	78.6	1.6	1	10.8	5.06	49.1	132	70.5	43	40	8
703	WA 8032-98	2	42.8	90.6	65	77.3	1.4	1	13.3	4.88	37.5	109	47.1	255	38	12
704	MN 698	2	40.5	97.2	64	78.0	1.6	2	12.9	3.94	31.2	49	37.7	257	26	23
705	WA 8006-98	2	46.6	97.9	70	78.4	1.7	2	11.6	4.44	39.3	107	47.9	294	46	5
706	WA 7704-98	2	40.5	94.0	61	78.2	1.5	1	12.6	4.98	40.2	132	57.9	137	43	6
707	WA 9163-98	2	42.4	96.7	67	78.8	n.d.	3	11.6	3.92	35.8	56	37.0	499	28	18
708	WA 7754-98	2	40.1	92.6	68	77.0	1.3	2	12.2	3.69	30.0	92	41.2	582	27	21
709	WA 9395-98	2	41.5	80.8	60	74.7	1.7	1	13.4	4.94	37.2	85	41.0	164	28	18
710	WA 8532-98	6	33.9	82.2	72	76.4	n.d.	3	10.9	4.11	38.0	122	38.4	340	20	25
711	WA 7156-98	2	42.3	97.4	62	78.8	1.6	1	12.9	4.87	39.3	83	56.4	479	28	18
713	WA 7394-98	2	47.1	97.9	66	79.7	2.2	1	12.4	5.95	48.7	110	54.6	246	43	6
714	WA 7041-98	2	38.6	77.5	80	74.5	n.d.	3	10.5	3.52	34.9	61	34.4	382	12	29
715	WA 10307-98	2	40.7	97.4	69	76.1	1.9	2	13.7	3.94	28.4	104	38.2	403	18	27
716	WA 9180-98	2	45.1	98.2	59	79.8	1.7	1	12.6	4.68	39.0	90	54.0	310	35	13
717	WA 7202-98	2	40.8	96.7	54	77.5	2.0	2	12.3	4.11	33.8	70	44.8	359	27	21
718	WA 7770-98	2	40.6	95.0	69	79.7	1.3	1	11.6	4.57	41.1	107	65.6	285	47	4
719	WA 7314-98	2	44.5	97.1	69	78.7	1.9	1	12.0	4.08	35.0	65	39.4	376	30	17

Table 51

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-					
			Weight 6/64"	Color (%)	Extract (Agtron)	Wort Color (%)	Wort Clarity (%)	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score	
712	HARRINGTON MALT CHECK	2	36.2	96.2	61	79.5	1.9	1	12.3	5.52	45.7	110	54.8	416	43
Minima			33.5	77.5	53	74.5	1.3		10.5	3.52	28.1	49	32.0	43	12
Maxima			48.6	98.8	80	80.3	2.2		13.7	5.95	49.1	152	70.5	582	59
Means			41.7	93.5	65	77.9	1.6		12.3	4.58	38.4	98	49.8	286	33
Standard Deviations			3.5	6.2	6	1.7	0.2		0.9	0.66	6.1	26	11.6	134	11
Coefficients of Variation			8.4	6.6	9	2.2	14.9		7.2	14.33	15.7	26	23.2	47	33

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 SPRING YIELD NURSERY #3 - PULLMAN, WA

Table 52

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64"	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Score	Rank
720	BARONESSE	2	40.4	92.7	68	76.2	2.7	2	12.1	3.66	31.5	78	38.5	275	27	18
721	HARRINGTON	2	40.4	94.9	66	80.3	1.4	1	11.9	5.07	43.4	105	73.6	126	51	1
723	MOREX	6	32.9	*75.2	74	78.6	1.7	2	12.8	4.85	40.5	146	53.2	94	51	1
724	WA 9353-98	2	42.6	96.2	62	76.2	1.3	1	12.6	4.19	35.5	137	48.1	141	35	6
725	WA 7276-98	2	43.1	97.1	59	77.9	1.6	2	12.6	4.10	33.1	75	45.8	300	23	23
726	WA 10324-98	2	43.5	98.8	65	75.7	1.4	2	14.5	4.93	33.7	122	44.5	495	32	9
727	WA 8531-98	6	36.5	89.7	68	77.9	n.d.	3	10.9	4.68	44.7	127	49.7	167	42	5
728	WA 9263-98	6	35.1	83.5	75	80.6	1.9	2	10.6	4.71	47.4	92	72.4	89	45	3
729	WA 9376-98	2	41.2	91.3	66	76.2	1.3	2	11.8	3.63	33.0	91	42.5	287	30	13
730	B-9	6	33.7	81.6	73	78.0	n.d.	3	11.8	4.03	34.9	117	42.9	246	27	18
731	WA 7355-98	2	46.5	92.7	67	77.9	1.7	1	14.2	5.64	41.7	149	65.0	378	20	26
732	WA 7204-98	2	41.3	97.5	59	77.7	1.7	2	12.6	3.85	31.0	63	41.7	456	22	24
733	WA 7261-98	2	40.5	95.2	66	78.6	1.8	2	11.7	3.83	35.0	65	43.9	461	31	10
734	WA 7813-98	2	38.9	96.7	68	78.0	n.d.	3	11.0	3.43	32.6	60	40.2	591	24	21
735	WA 8120-98	2	37.8	93.0	69	78.3	n.d.	3	12.1	3.76	31.2	98	45.8	296	33	8
736	WA 7226-98	2	48.0	98.0	72	78.6	1.4	1	13.2	5.16	39.6	109	52.4	284	35	6
737	WA 7320-98	2	43.6	98.2	63	77.4	1.3	1	13.5	4.31	32.1	112	41.4	314	31	10
738	WA 10308-98	2	44.8	98.1	66	78.0	1.8	1	13.7	5.58	41.3	115	60.8	339	31	10
739	WA 7323-98	2	42.7	97.3	63	78.1	1.3	1	12.7	4.19	34.5	82	48.4	317	28	16
740	WA 7379-98	2	43.6	96.3	64	80.2	1.4	1	12.4	4.89	42.1	87	65.1	287	44	4
741	WA 7779-98	2	38.2	93.9	77	80.3	n.d.	3	11.2	4.16	38.0	89	55.7	273	27	18
742	WA 7777-98	2	38.7	95.2	61	78.3	1.3	1	12.1	3.87	33.3	76	47.9	687	30	13
744	WA 10331-98	2	44.1	98.4	68	76.4	1.3	1	14.3	4.66	33.1	131	47.0	386	30	13
745	WA 7180-98	2	42.3	98.5	61	77.7	1.4	2	13.5	4.35	33.3	107	54.4	432	24	21
746	WA 7185-98	2	43.5	97.9	64	77.1	1.5	2	11.9	3.66	31.4	61	46.1	494	28	16
747	WA 9110-98	2	46.8	97.5	53	74.1	n.d.	3	12.7	3.70	29.3	111	31.8	730	22	24
722	HARRINGTON MALT CHECK	2	36.2	88.4	62	79.4	2.2	2	12.2	5.23	45.9	99	59.6	408	30	
743	HARRINGTON MALT CHECK	2	35.9	89.8	60	79.5	1.9	1	12.8	5.25	43.5	97	65.3	394	29	
Minima			32.9	81.6	53	74.1	1.3		10.6	3.43	29.3	60	31.8	89	20	
Maxima			48.0	98.8	77	80.6	2.7		14.5	5.64	47.4	149	73.6	730	51	
Means			41.2	94.8	66	77.9	1.6		12.5	4.34	36.1	100	50.0	344	32	
Standard Deviations			3.9	4.4	5	1.5	0.3		1.0	0.62	4.9	26	10.3	166	9	
Coefficients of Variation			9.4	4.7	8	1.9	21.2		8.3	14.31	13.7	26	20.6	48	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 SPRING YIELD NURSERY #4 - PULLMAN, WA

Table 53

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Protein	Protein	S/T (%)	DP (°ASBC)	amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
748	BARONESSE	2	40.0	95.2	68	77.6	n.d.	3	10.4	3.47	33.6	76	39.6	135	30	11
749	HARRINGTON	2	41.5	96.4	67	80.5	1.4	1	11.7	4.91	44.9	104	71.5	143	51	1
750	MOREX	6	34.6	83.5	77	78.5	1.8	2	12.3	4.65	38.7	134	53.5	212	46	3
751	WA 9143-98	2	45.6	97.4	58	76.7	n.d.	3	12.5	4.04	32.3	113	39.6	229	34	6
752	WA 7163-98	2	41.3	96.0	62	78.3	1.5	2	12.3	4.20	35.1	83	55.3	357	24	21
753	WA 7763-98	2	39.6	88.6	75	77.8	1.6	2	9.6	3.30	36.1	57	37.0	542	15	27
754	WA 7708-98	2	40.4	91.2	61	77.7	1.4	1	12.2	4.63	38.8	71	47.8	316	35	5
755	WA 7173-98	2	41.0	96.4	67	77.8	1.4	1	11.1	3.94	35.7	81	45.2	407	28	13
756	CMB93A.123-H-1	6	36.4	83.9	70	76.6	1.5	1	11.3	4.03	36.5	96	54.4	226	32	7
757	CMB93A.1185-U-1	6	31.4	*63.6	77	75.5	1.4	2	10.8	3.89	36.7	89	45.8	123	29	12
758	CMB93.803-B-2Y	6	36.0	99.4	73	75.2	1.7	2	11.6	4.27	37.2	116	51.2	176	31	9
759	CMB93.824-J-3Y	6	34.3	79.3	58	73.2	n.d.	3	12.2	3.59	29.5	85	40.7	721	24	21
760	CMB93.682-A-6Y	6	37.5	77.8	71	73.6	1.3	2	12.1	3.81	32.0	122	40.1	274	28	13
761	CMB93A.1156-J-2	6	37.0	92.2	61	75.0	n.d.	3	11.6	3.82	33.1	138	39.4	359	24	21
762	CMB93A.606-A-1Y	6	35.9	84.2	76	74.9	1.5	2	11.6	3.90	34.0	96	50.8	345	28	13
763	CMB93A.770-D-6Y	6	35.8	91.4	63	74.9	n.d.	3	11.6	4.55	39.6	73	48.7	324	27	16
764	CMB93A.1231-T-5	2	43.0	96.5	56	74.5	1.5	2	*14.8	4.98	33.2	109	54.3	354	26	17
765	WA 7017-97	2	41.4	94.9	79	77.9	n.d.	3	11.8	4.11	35.6	66	52.4	194	26	17
766	WA 14082-97	2	40.3	95.6	65	77.3	1.3	2	11.9	3.82	33.9	73	39.0	577	24	21
768	WA 7003-97	2	42.6	97.8	65	77.2	n.d.	3	12.5	3.87	31.2	67	44.5	222	25	20
769	WA 10642-97	2	41.5	94.9	63	80.5	1.7	1	12.0	5.29	46.2	99	72.7	281	38	4
770	WA 10932-97	2	41.1	95.9	62	77.8	n.d.	3	11.3	3.42	30.6	82	33.7	530	19	25
771	WA 8481-97	2	39.3	90.6	72	78.7	n.d.	3	10.8	3.86	37.1	81	45.8	165	31	9
772	WA 10645-97	2	40.5	90.1	67	79.9	1.7	1	11.0	4.90	44.1	107	69.5	264	47	2
773	WA 10410-97	2	41.7	96.3	63	77.3	n.d.	3	12.6	3.92	33.2	90	52.0	528	18	26
774	WA 14021-97	2	44.4	98.2	60	78.4	1.4	2	12.0	3.98	35.0	55	47.1	479	32	7
775	WA 8410-97	2	41.9	96.2	61	78.0	n.d.	3	11.1	3.58	34.7	46	39.9	284	26	17
767	HARRINGTON MALT CHECK	2	35.7	89.7	63	79.8	2.0	2	12.2	5.69	49.0	87	59.3	346	24	
Minima			31.4	77.8	56	73.2	1.3		9.6	3.30	29.5	46	33.7	123	15	
Maxima			45.6	99.4	79	80.5	1.8		12.6	5.29	46.2	138	72.7	721	51	
Means			39.5	92.3	67	77.1	1.5		11.6	4.10	35.9	89	48.6	325	30	
Standard Deviations			3.4	6.0	7	1.9	0.2		0.7	0.51	4.1	23	10.1	153	8	
Coefficients of Variation			8.5	6.5	10	2.5	10.3		6.1	12.53	11.5	26	20.8	47	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 BRAZIL NURSERY - PULLMAN, WA

Table 54

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
776	BR 2	2	42.4	96.6	52	75.8	1.4	2	14.4	4.21	29.5	93	48.4	396	18	14
777	EMBRAPA 127	2	39.5	97.3	48	75.4	n.d.	3	16.3	4.51	27.9	134	49.3	139	32	2
778	EMBRAPA 128	2	40.6	95.2	49	74.3	1.6	2	15.1	4.32	28.5	98	47.3	383	21	9
779	EMBRAPA 129	2	42.8	97.6	53	74.2	1.6	2	14.3	3.95	27.4	87	37.9	609	15	17
780	MN 698	2	39.7	95.7	69	78.2	1.6	2	12.0	3.85	32.8	42	35.2	268	29	3
781	HARRINGTON	2	35.5	85.1	74	80.3	1.4	1	11.5	5.03	*44.9	103	62.1	173	41	1
782	PFC 9211	2	46.2	96.6	54	75.7	1.5	2	13.7	4.24	30.7	117	39.5	453	22	6
783	PFC 9213	2	48.6	98.6	50	75.1	1.7	2	14.3	4.21	30.2	111	36.0	601	22	6
784	PFC 9325	2	43.1	97.9	60	77.7	1.6	2	13.5	3.90	30.1	109	33.2	307	20	10
785	CEV 95076	2	43.1	97.2	59	75.0	1.9	2	14.5	4.37	30.5	52	39.8	537	15	17
786	CEV 96017	2	37.6	83.3	64	76.1	1.3	1	13.6	4.08	30.5	105	41.3	309	13	21
787	CEV 96020	2	40.0	94.6	70	76.1	1.2	1	12.5	3.49	27.6	90	33.3	416	19	13
788	CEV 96044	2	40.6	96.8	49	76.4	n.d.	3	13.6	3.75	28.6	38	30.1	495	9	22
789	CEV 96046	2	35.7	86.0	65	75.7	1.9	2	13.1	3.55	28.1	76	30.1	409	9	22
790	CEV 96053	2	35.6	93.8	52	76.5	1.5	1	14.9	3.95	27.6	110	39.4	225	18	14
792	CEV 96059	2	38.3	92.9	60	75.8	1.3	1	14.0	3.82	26.9	105	42.2	392	20	10
793	CEV 96060	2	38.8	90.6	58	75.5	1.3	1	14.7	3.93	27.7	106	43.7	427	20	10
794	PFC 9215	2	46.0	97.9	54	73.6	1.5	2	15.5	3.91	26.2	85	37.5	597	15	17
795	HARRINGTON	2	38.2	86.4	67	79.0	1.4	1	13.3	5.13	39.1	111	63.1	323	26	5
796	CEV 95076	2	43.2	97.6	54	74.7	n.d.	3	14.5	4.03	27.9	42	39.4	621	14	20
797	PFC 9214	2	46.1	98.4	51	75.4	1.4	2	15.2	4.05	27.3	98	40.2	591	22	6
798	PFC 9210-05	2	42.0	96.2	53	73.7	1.6	2	16.7	4.41	27.6	99	49.0	478	29	3
799	PFC 9210-04	2	43.4	97.1	53	74.6	2.0	2	15.0	4.36	29.7	91	49.6	468	18	14
800	GUNTHER	2	41.6	95.6	55	75.2	n.d.	3	14.5	3.84	27.8	83	34.4	538	9	22
791	HARRINGTON MALT CHECK	2	36.2	89.7	61	79.4	2.3	1	11.5	5.26	46.3	76	51.2	418	26	
Minima			35.5	83.3	48	73.6	1.2		11.5	3.49	26.2	38	30.1	139	9	
Maxima			48.6	98.6	74	80.3	2.0		16.7	5.13	39.1	134	63.1	621	41	
Means			41.2	94.4	57	75.8	1.5		14.2	4.12	29.1	91	41.7	423	20	
Standard Deviations			3.5	4.6	7	1.6	0.2		1.2	0.39	2.7	25	8.6	140	8	
Coefficients of Variation			8.5	4.9	13	2.1	13.5		8.6	9.56	9.1	27	20.7	33	38	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S. E. Ullrich, Washington State University - Pullman

2000 SINGLE REP NURSERY #1 - PULLMAN, WA

Table 55

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
			(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
1330	WA 9371-99	2	43.6	97.2	70	77.2	n.d.	3	13.1	4.15	32.2	101	50.0	521	23	24
1331	WA 11370-99	2	38.5	92.7	68	76.2	n.d.	3	12.8	3.70	28.9	100	37.8	538	20	28
1332	WA 10433-99	2	38.0	88.6	68	78.4	n.d.	3	11.9	3.91	33.1	67	35.3	432	21	26
1333	WA 10241-99	2	44.2	96.4	61	78.3	1.7	1	13.9	5.14	38.6	100	51.7	249	30	17
1334	WA 8339-99	2	39.7	93.4	67	78.8	1.2	1	12.8	4.60	36.0	133	56.0	84	36	13
1335	WA 9338-99	2	41.2	92.4	62	77.0	1.8	2	13.5	5.18	40.5	78	70.4	250	26	22
1336	WA 10590-99	2	40.5	95.9	54	77.1	1.3	2	13.4	4.01	30.8	102	44.6	260	29	18
1337	WA 7639-99	2	38.0	97.0	66	80.1	1.4	1	10.9	4.45	41.4	83	73.1	79	39	5
1338	WA 7190-99	2	39.2	91.5	57	76.7	2.1	2	12.4	3.62	29.3	59	33.0	489	18	32
1339	WA 10139-99	2	35.9	88.9	54	75.8	1.9	2	14.1	4.22	29.8	97	47.3	218	18	32
1340	WA 10533-99	2	43.2	97.3	58	79.3	1.7	1	13.1	4.76	37.4	101	51.5	79	39	5
1341	WA 10715-99	2	41.0	91.0	70	79.2	1.4	1	12.7	4.77	38.1	102	63.3	133	38	9
1343	WA 10478-99	2	38.8	85.6	70	77.4	n.d.	3	12.7	3.83	29.8	80	37.7	339	14	35
1344	WA 9412-99	2	41.1	97.3	67	78.4	1.4	1	12.1	4.20	35.4	54	55.1	268	28	19
1345	WA 9328-99	2	38.3	88.9	66	76.9	1.2	1	14.0	3.71	27.4	120	46.4	423	21	26
1346	WA 7365-99	2	37.9	87.0	60	76.8	1.2	2	12.7	3.75	30.1	110	38.7	362	20	28
1347	WA 9689-99	2	38.9	94.5	58	77.5	n.d.	3	13.1	3.93	31.0	84	48.7	172	22	25
1348	WA 8031-99	2	42.9	94.6	67	79.1	1.4	2	12.0	4.23	35.3	92	55.3	310	25	23
1349	HARRINGTON	2	38.8	92.9	66	80.3	1.3	2	12.4	4.87	39.9	107	69.7	186	39	5
1350	WA 8145-99	2	42.3	92.4	62	78.6	1.4	1	12.5	4.54	37.0	124	69.9	222	43	4
1351	WA 10040-99	2	36.0	*76.6	62	76.4	1.3	1	12.9	3.74	30.4	87	43.1	171	17	34
1352	WA 9783-99	2	39.3	95.8	62	79.9	1.3	1	12.8	4.61	38.1	100	60.5	61	35	14
1353	WA 9019-99	2	42.0	96.5	68	78.0	1.4	1	13.2	4.86	36.5	137	47.7	268	38	9
1354	WA 10101-99	2	38.8	95.7	64	78.2	2.2	2	12.3	3.83	32.0	94	46.0	166	32	15
1355	WA 9750-99	2	40.6	95.9	74	80.1	1.5	1	11.3	4.73	44.1	97	74.5	41	47	3
1356	WA 11301-99	2	36.8	89.4	68	79.1	1.7	1	12.6	4.93	39.2	107	72.2	169	28	19
1357	HARRINGTON	2	38.7	91.5	67	76.8	n.d.	3	12.8	4.01	32.4	125	70.9	493	19	30
1358	WA 7560-99	2	43.0	95.4	65	76.4	1.3	1	12.3	3.66	30.7	113	62.1	214	32	15
1359	WA 9996-99	2	40.4	93.2	77	76.5	n.d.	3	12.0	3.81	33.0	91	68.3	327	19	30
1360	WA 9701-99	2	38.3	91.7	68	79.2	1.3	1	11.9	4.57	40.9	101	47.9	178	49	2

Table 55

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein	(°ASBC)	(20°DU)	(ppm)	amylase	glucan	
1361	WA 8108-99	2	39.8	96.1	69	79.9	1.2	1	13.0	4.81	38.8	91	47.8	233	38	9
1362	WA 9644-99	2	39.3	93.7	55	79.3	1.3	1	13.1	4.45	34.3	99	49.8	291	39	5
1363	WA 8569-99	2	38.7	89.9	67	80.9	1.6	1	12.0	5.07	42.6	98	40.5	144	54	1
1364	HARRINGTON	2	38.4	90.8	65	77.0	n.d.	3	12.2	3.87	32.4	118	68.0	68	27	21
1365	WA 7628-99	2	39.5	95.8	62	78.9	1.3	1	12.4	4.50	37.8	105	69.4	161	37	12
1342	HARRINGTON MALT CHECK	2	40.2	94.4	74	81.7	1.7	1	11.1	5.98	56.1	117	78.9	40	41	
Minima			35.9	85.6	54	75.8	1.2		10.9	3.62	27.4	54	33.0	41	14	
Maxima			44.2	97.3	77	80.9	2.2		14.1	5.18	44.1	137	74.5	538	54	
Means			39.8	93.1	65	78.2	1.5		12.7	4.31	35.0	99	54.4	246	30	
Standard Deviations			2.1	3.2	5	1.4	0.3		0.7	0.48	4.4	18	12.5	137	10	
Coefficients of Variation			5.2	3.4	8	1.8	18.1		5.5	11.19	12.7	19	23.0	56	34	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 SINGLE REP NURSERY #2 - PULLMAN, WA

Table 56

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein			(% ASBC)	(20°DU)	glucan (ppm)	Score	Rank
1367	WA 7342-99	2	37.3	81.5	61	75.5	1.3	1	13.2	4.02	30.5	117	45.6	284	24	25
1368	WA 10407-99	2	38.8	94.2	68	77.7	2.5	2	11.7	3.53	30.4	82	42.2	132	32	16
1369	WA 9739-99	2	37.0	85.9	64	76.1	1.2	1	14.3	4.39	32.5	117	63.2	270	15	32
1370	WA 10803-99	2	38.1	93.1	66	77.5	n.d.	3	12.9	3.61	28.6	105	40.2	332	23	28
1371	WA 7301-99	2	36.9	79.2	64	77.0	1.7	2	12.2	3.59	29.6	93	37.7	323	15	32
1372	WA 8534-99	2	38.1	93.0	74	78.9	n.d.	3	10.8	3.39	33.0	72	39.9	283	28	19
1373	WA 10350-99	2	38.7	88.0	67	79.6	1.7	1	12.1	4.50	39.7	91	66.1	214	34	11
1374	WA 7718-99	6	36.1	89.6	72	75.3	1.4	1	11.9	3.71	32.9	131	45.2	447	33	15
1375	WA 8302-99	2	42.1	96.6	63	77.0	1.3	1	13.6	3.84	29.4	127	48.9	270	29	17
1376	WA 8042-99	2	44.0	96.1	64	76.2	n.d.	3	13.5	3.98	30.2	141	52.3	310	14	34
1377	WA 10190-99	2	38.0	91.8	63	77.7	n.d.	3	12.0	3.56	31.6	87	46.7	237	25	24
1378	WA 9955-99	2	42.4	96.4	65	79.1	1.3	1	12.1	4.21	36.1	120	55.1	272	36	7
1379	WA 11353-99	2	40.0	85.5	70	79.5	2.5	2	12.0	4.67	40.5	94	62.9	195	40	2
1380	WA 9723-99	2	41.4	95.9	72	79.3	2.0	2	13.1	4.90	40.0	122	70.1	40	38	3
1381	WA 8607-99	2	40.3	96.8	57	76.8	1.3	2	13.4	3.77	28.2	105	48.7	256	29	17
1382	WA 9625-99	2	40.7	97.3	58	78.1	1.5	2	13.3	3.93	31.2	84	65.3	162	22	29
1383	WA 9218-99	6	36.3	91.5	73	78.4	1.8	1	12.0	5.34	46.8	99	83.3	105	36	7
1384	WA 9094-99	2	40.2	95.8	75	77.8	1.2	1	11.7	3.90	33.7	52	49.3	309	28	19
1385	WA 9776-99	2	37.3	90.2	64	77.2	1.5	1	14.0	4.87	35.0	114	67.6	153	24	25
1386	WA 7617-99	2	38.8	94.2	65	78.9	1.4	1	12.4	4.48	38.6	106	67.7	152	37	4
1387	WA 10794-99	2	44.2	96.5	66	78.9	1.5	1	12.8	4.80	38.0	127	56.0	314	35	10
1388	WA 9027-99	2	40.7	94.8	65	77.4	1.7	2	12.3	4.10	35.5	61	52.7	264	27	21
1389	WA 10362-99	2	38.3	88.2	68	79.7	1.4	1	12.3	4.48	36.4	91	64.4	261	34	11
1391	WA 10419-99	2	37.7	86.8	75	78.5	n.d.	3	11.4	4.25	38.2	80	59.8	84	24	25
1392	WA 10178-99	2	37.2	87.4	64	78.6	n.d.	3	12.1	3.68	30.9	80	47.0	151	27	21
1393	WA 9433-99	2	41.7	94.2	65	78.7	n.d.	3	12.4	4.45	37.2	51	53.0	458	34	11
1394	WA 8860-99	2	40.8	96.4	67	76.7	1.2	1	13.2	4.09	31.3	136	43.8	389	27	21
1395	WA 7996-99	2	40.2	95.1	61	79.4	1.5	1	12.1	4.62	39.7	102	59.4	132	43	1
1396	WA 7105-99	2	*46.9	97.9	61	75.6	n.d.	3	*15.6	4.25	27.9	89	37.7	*599	14	34
1397	WA 10818-99	2	40.3	93.7	56	78.2	1.3	1	13.2	4.41	34.7	116	62.7	175	37	4

Table 56

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	Alpha-	Beta-	Quality	Overall		
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein	(%ASBC)	DP (20°DU)	amylase	glucan (ppm)		
1398	WA 11709-99	6	38.9	89.9	60	77.3	1.5	1	12.7	4.87	40.7	125	58.5	197	36	7
1399	WA 11801-99	2	41.2	90.3	64	77.1	1.5	2	13.7	3.84	28.6	87	42.8	299	20	31
1400	WA 7264-99	2	37.8	92.2	52	78.2	1.5	1	13.6	4.21	31.5	64	47.4	201	21	30
1401	WA 10412-99	2	39.1	93.0	64	78.8	1.5	1	12.4	4.79	39.3	103	72.4	34	34	11
1402	WA 9942-99	2	39.7	90.5	75	79.1	1.6	1	12.6	5.07	41.0	98	65.5	158	37	4
1366	HARRINGTON MALT CHECK	2	39.8	96.0	74	81.0	1.6	1	11.4	5.68	52.9	123	79.5	48	39	
1390	HARRINGTON MALT CHECK	2	39.9	95.7	76	81.2	1.4	1	11.8	5.43	47.7	130	69.4	74	42	
Minima			36.1	79.2	52	75.3	1.2		10.8	3.39	27.9	51	37.7	34	14	
Maxima			44.2	97.9	75	79.7	2.5		14.3	5.34	46.8	141	83.3	458	43	
Means			39.4	92.0	65	77.9	1.5		12.6	4.23	34.6	99	54.9	231	29	
Standard Deviations			2.1	4.5	6	1.2	0.3		0.8	0.50	4.7	23	11.3	103	8	
Coefficients of Variation			5.2	4.9	8	1.6	20.9		6.3	11.72	13.6	23	20.5	44	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 SINGLE REP NURSERY #3 - PULLMAN, WA

Table 57

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein						
		(mg)	(%)	(Agtron)	(%)	Color	Clarity	(%)	(%)	(°ASBC)	DP	amylase	glucan	Score	Rank	
1403	WA 10027-99	2	38.8	95.9	57	77.9	1.8	2	12.4	4.00	34.1	58	52.9	236	25	17
1404	WA 11607-99	2	37.3	95.5	62	78.4	1.3	1	14.0	5.02	37.5	123	78.0	168	28	11
1405	WA 9623-99	2	38.1	88.3	52	75.5	n.d.	3	14.0	3.62	27.2	76	54.4	244	12	35
1406	WA 7352-99	2	38.4	89.0	64	76.2	1.2	2	13.8	3.88	27.8	115	38.0	463	17	29
1407	WA 10421-99	2	39.1	87.8	71	78.6	n.d.	3	11.7	4.61	39.8	107	62.8	78	33	6
1408	WA 10718-99	2	41.6	92.6	65	78.9	1.7	2	13.6	4.78	36.2	149	56.6	360	21	24
1409	WA 8001-99	2	45.7	97.3	53	77.8	n.d.	3	13.8	4.70	34.3	151	63.4	127	24	20
1410	WA 8140-99	2	42.5	95.4	64	78.3	1.7	2	14.2	5.49	40.6	79	76.7	385	23	21
1411	WA 10750-99	2	40.3	96.9	55	78.2	1.6	2	13.5	4.43	34.5	115	58.2	129	35	4
1412	WA 10128-99	2	36.4	86.8	60	77.1	n.d.	3	12.6	3.71	31.1	76	47.8	198	18	28
1413	WA 8783-99	2	44.3	97.0	54	79.2	n.d.	3	13.0	4.69	37.1	70	50.3	295	33	6
1415	WA 10525-99	2	39.1	94.8	60	78.8	1.6	2	12.7	4.80	39.1	93	73.0	95	31	8
1416	WA 9434-99	2	40.3	92.1	69	79.2	1.6	2	13.3	5.53	41.8	121	66.3	138	41	3
1417	WA 7210-99	2	39.1	94.9	59	78.5	n.d.	3	12.4	3.99	33.7	76	38.3	227	28	11
1418	WA 7989-99	2	38.0	89.1	68	77.9	1.3	1	14.0	5.16	38.5	138	56.1	263	17	29
1419	WA 8528-99	2	41.0	94.0	69	77.9	n.d.	3	13.2	4.40	34.6	82	45.8	383	28	11
1420	WA 8370-99	2	39.4	95.0	66	78.9	1.4	2	13.0	4.57	35.3	92	58.5	136	31	8
1421	WA 9052-99	2	40.0	96.8	74	79.2	n.d.	3	12.1	4.07	35.1	50	47.8	275	31	8
1422	WA 9326-99	2	39.8	89.8	68	77.1	n.d.	3	12.9	3.78	29.9	106	41.0	450	21	24
1423	WA 9747-99	2	39.4	94.3	70	77.4	n.d.	3	12.1	3.76	31.9	90	40.6	231	27	14
1424	WA 8862-99	2	38.9	85.7	60	77.3	n.d.	3	13.0	3.73	29.8	86	37.7	335	14	33
1425	WA 9764-99	2	36.7	91.3	67	77.7	n.d.	3	12.4	4.20	36.1	85	53.9	125	26	15
1426	WA 8597-99	2	40.6	91.6	64	77.2	n.d.	3	13.1	3.89	30.3	102	41.5	357	25	17
1427	WA 11350-99	2	35.8	93.4	68	78.5	n.d.	3	12.6	4.23	35.9	103	50.5	435	22	22
1428	WA 10885-99	2	37.2	87.4	60	77.4	1.3	1	13.0	4.15	33.6	106	63.5	192	17	29
1429	WA 8631-99	2	40.5	96.3	58	77.4	1.3	2	13.8	3.92	29.6	102	41.1	330	21	24
1430	WA 9950-99	2	41.3	94.8	67	78.7	1.9	2	13.4	4.93	38.6	94	55.7	500	26	15
1431	WA 10044-99	2	35.6	89.2	59	77.5	n.d.	3	13.0	3.69	30.0	81	45.7	343	15	32
1432	WA 7958-99	2	41.2	95.8	70	79.1	1.4	1	12.9	5.20	42.3	134	63.5	193	35	4
1433	WA 7138-99	2	40.5	89.8	68	77.3	1.2	2	14.8	4.24	30.1	112	40.1	445	22	22

Table 57

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
1434	WA 9673-99	2	40.2	96.9	52	77.7	1.8	2	13.3	4.19	32.3	74	43.5	233	25	17
1435	HARRINGTON	2	40.1	92.0	69	79.5	1.3	1	12.7	4.91	40.2	116	67.6	245	45	2
1436	WA 9634-99	2	38.4	84.4	62	77.3	n.d.	3	12.6	3.96	33.4	83	46.0	331	14	33
1437	MOREX	6	33.4	*78.3	78	79.1	1.6	2	13.1	5.13	41.2	157	57.1	191	49	1
1439	WA 8050-99	2	46.6	96.7	61	76.2	n.d.	3	13.6	3.98	29.4	108	48.8	486	21	24
1414	HARRINGTON MALT CHECK	2	39.9	95.0	76	81.0	1.4	1	11.7	5.32	48.3	124	72.1	73	39	
1438	HARRINGTON MALT CHECK	2	39.9	95.7	77	81.1	1.5	1	11.9	5.53	49.8	122	72.3	63	42	
Minima			33.4	84.4	52	75.5	1.2		11.7	3.62	27.2	50	37.7	78	12	
Maxima			46.6	97.3	78	79.5	1.9		14.8	5.53	42.3	157	78.0	500	49	
Means			39.6	92.6	64	78.0	1.5		13.1	4.38	34.7	100	53.2	275	26	
Standard Deviations			2.7	3.7	6	1.0	0.2		0.7	0.55	4.2	26	11.2	120	9	
Coefficients of Variation			6.7	4.0	10	1.2	15.2		5.1	12.57	12.2	26	21.0	44	33	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 STATE UNIFORM NURSERY - PULLMAN

Table 58

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	Alpha-	Beta-	Quality	Overall			
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein						
			(mg)	(%)	(Agtron)	(%)			(%)	(%)	(°ASBC)	(20°DU)	(ppm)	Score	Rank	
1683	BARONESSE	2	37.6	87.4	70	76.0	2.2	2	12.4	3.45	30.0	72	37.4	415	18	30
1684	WA 9504-94	2	37.5	92.0	58	78.6	2.0	2	12.0	4.07	35.1	102	38.3	478	28	16
1685	HARRINGTON	2	37.4	85.2	70	79.2	1.2	1	11.9	4.59	40.3	110	67.2	348	35	8
1687	BANCROFT	2	39.7	88.3	71	79.5	1.3	1	11.9	4.48	38.6	100	49.8	474	42	3
1688	ORCA	2	*47.9	98.3	55	77.9	1.7	1	13.5	5.24	39.8	147	77.3	150	18	30
1689	BCD 47	2	41.9	91.0	68	77.8	1.3	1	12.8	4.63	38.1	146	80.4	254	26	19
1690	CREST	2	37.2	86.4	64	78.8	1.3	1	13.0	4.97	40.6	99	78.5	369	30	12
1691	JERSEY	2	38.1	93.3	60	79.3	1.2	2	11.7	3.77	33.6	90	50.4	153	29	14
1692	VALIER	2	35.9	83.1	69	79.3	1.2	1	11.3	4.35	40.9	82	79.0	365	21	25
1693	H3869224	6	38.6	94.8	64	80.3	1.2	1	11.4	4.31	40.5	82	66.2	363	37	6
1694	PONGO	2	37.2	92.6	69	78.5	1.6	2	10.8	3.18	30.7	78	35.0	359	24	23
1695	MENTOR	2	39.5	98.0	64	80.2	1.7	2	10.9	3.60	34.5	89	37.6	229	32	10
1696	WA 7942-96	2	*47.3	98.0	69	79.1	1.6	1	12.4	5.14	44.7	115	60.1	546	41	4
1697	WA 11832-95	2	38.3	92.1	76	79.5	1.1	1	11.1	3.92	37.5	56	45.3	283	36	7
1698	WA 11801-95	2	38.5	93.5	67	79.5	1.7	2	12.0	4.23	38.0	93	55.2	265	28	16
1699	WA 11825-95	2	36.4	88.6	72	78.6	1.2	1	11.6	3.93	35.7	72	50.2	201	26	19
1700	WA 12953-95	2	40.0	86.2	73	79.5	1.3	1	12.0	4.45	38.4	79	54.7	251	38	5
1701	WA 12223-95	2	40.4	86.3	69	79.4	1.1	1	11.9	3.98	34.6	78	48.9	402	33	9
1702	WA 8682-96	2	40.0	94.7	69	78.5	n.d.	3	11.5	4.13	36.5	91	53.8	386	25	22
1703	WA 8709-96	2	39.6	92.2	67	77.7	n.d.	3	11.8	3.56	30.8	54	40.8	365	24	23
1704	WA 10147-96	2	39.3	90.7	66	77.7	n.d.	3	11.8	3.39	30.3	46	37.3	448	21	25
1705	WA 10138-96	2	40.5	93.9	66	78.4	n.d.	3	11.6	3.71	32.3	62	38.1	281	30	12
1706	WA 8710-96	2	40.3	90.4	62	76.3	n.d.	3	12.7	3.50	28.0	58	41.5	482	21	25
1707	WA 8831-96	2	39.4	94.8	69	78.8	1.2	2	11.8	4.07	35.7	80	51.9	497	26	19
1708	WA 8718-96	2	38.9	89.9	63	76.7	n.d.	3	12.1	3.50	29.1	53	36.6	462	19	29
1709	CA 803803	2	35.4	85.3	64	80.1	1.4	1	11.7	3.81	33.6	76	50.2	295	29	14
1711	98NZ533	2	39.0	92.1	75	80.3	1.6	2	11.1	3.81	34.5	52	54.1	274	32	10
1712	98NZ015	2	37.7	82.3	58	78.6	n.d.	3	12.2	3.93	33.8	58	41.4	379	21	25
1713	98NZ532	2	37.8	87.3	73	79.7	1.4	1	12.7	4.66	39.0	56	67.4	207	27	18
1714	98NZ223	2	37.8	81.7	70	78.7	1.3	2	11.8	3.82	33.1	90	61.3	281	18	30

Table 58

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort			Alpha-	Beta-	Overall		
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	Protein	S/T	DP	amylase	glucan		
1715	98NZ234	2	41.1	96.1	70	80.6	n.d.	3	12.2	4.90	42.7	94	63.1	143	45	2
1716	98NZ226	2	38.9	93.6	76	79.9	n.d.	3	11.8	4.65	41.6	96	64.1	132	47	1
1686	HARRINGTON MALT CHECK	2	39.8	95.3	74	80.8	1.4	1	11.6	5.30	49.8	113	72.1	158	39	
1710	HARRINGTON MALT CHECK	2	40.0	94.5	75	81.3	1.4	1	11.9	5.27	48.3	127	68.7	143	48	
Minima			35.4	81.7	55	76.0	1.1		10.8	3.18	28.0	46	35.0	132	18	
Maxima			41.9	98.3	76	80.6	2.2		13.5	5.24	44.7	147	80.4	546	47	
Means			38.7	90.6	67	78.8	1.4		11.9	4.12	36.0	83	53.5	329	29	
Standard Deviations			1.5	4.6	5	1.1	0.3		0.6	0.54	4.3	25	13.8	114	8	
Coefficients of Variation			3.9	5.0	8	1.4	20.0		5.1	13.06	11.9	30	25.7	35	28	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 PRELIMINARY STATE NURSERY - PULLMAN

Table 59

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Quality	Overall	
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein	Protein		(°ASBC)	(20°DU)			
			(mg)	(%)	(Agtron)	(%)		(%)	(%)	(%)	(%)	(°F)	(ppm)	Score	Rank	
1717	HARRINGTON	2	40.4	94.1	67	80.1	1.3	1	12.7	4.78	39.8	104	*72.7	279	37	3
1718	WA 8792-96	2	43.1	96.7	62	78.7	n.d.	3	12.3	3.96	32.7	78	49.2	358	31	4
1719	WA 10144-96	2	42.0	94.7	62	77.5	2.9	1	11.7	3.52	31.4	52	37.1	576	25	11
1720	WA 14528-97	2	41.5	94.8	63	77.8	n.d.	3	13.7	4.44	33.1	123	47.1	569	30	7
1721	WA 8769-96	2	41.5	94.9	63	75.3	n.d.	3	14.4	3.58	26.2	72	38.1	687	13	28
1722	WA 8759-96	2	39.4	96.3	63	77.1	2.0	2	12.8	3.92	30.9	60	48.2	425	20	23
1723	WA 9221-96	2	40.5	92.9	68	76.4	n.d.	3	13.4	3.99	30.8	88	43.2	438	21	21
1724	WA 10112-96	2	45.8	98.1	60	77.1	2.2	1	13.0	3.92	31.3	62	37.7	598	21	21
1725	WA 7908-96	6	*50.2	98.0	65	78.7	1.6	2	13.2	*5.28	41.3	131	57.1	688	40	1
1726	WA 7478-97	2	37.6	83.2	63	77.5	1.6	2	13.0	3.57	28.9	66	36.9	657	10	29
1727	WA 8601-97	2	42.1	94.1	64	76.4	1.7	1	12.9	3.53	27.5	63	42.0	373	24	14
1728	WA 9970-97	2	39.0	92.3	*88	77.5	1.1	2	12.9	4.08	32.0	76	50.1	447	17	27
1729	WA 13898-97	2	39.8	95.5	60	77.9	1.9	2	12.0	3.67	31.1	64	47.1	461	25	11
1730	WA 7026-97	2	39.3	87.8	65	76.0	1.1	2	13.6	3.90	29.3	66	58.6	524	6	30
1731	WA 10067-97	2	40.5	91.9	70	77.8	1.1	2	13.3	3.96	31.7	103	43.0	401	26	9
1732	WA 9904-97	2	38.1	89.9	65	77.5	1.1	2	13.2	3.80	30.1	101	46.2	628	22	19
1733	WA 10903-97	2	40.5	90.0	57	76.7	1.0	2	12.8	3.79	30.1	72	37.1	559	19	25
1735	WA 10497-97	2	39.2	95.3	66	77.8	1.0	1	12.3	4.01	34.4	94	48.5	389	26	9
1736	WA 8608-97	2	42.7	97.4	63	77.8	2.0	2	12.8	3.68	30.5	69	41.8	371	23	16
1737	WA 12571-97	2	42.6	92.8	59	78.1	2.0	2	13.5	4.22	32.7	111	51.7	499	31	4
1738	WA 10718-97	2	43.8	94.0	75	79.2	1.4	2	12.9	4.72	39.4	131	48.7	521	38	2
1739	WA 9502-97	2	40.7	95.0	68	79.4	1.2	2	12.9	4.27	35.4	99	54.2	428	27	8
1740	WA 8674-96	2	40.0	92.8	70	78.6	n.d.	3	12.8	3.80	31.4	91	47.8	507	23	16
1741	WA 12554-97	2	39.4	95.4	64	76.7	1.1	2	13.7	3.81	29.0	104	42.7	611	19	25
1742	WA 10467-97	2	39.5	94.5	69	77.2	n.d.	3	11.7	3.84	34.0	86	43.9	487	24	14
1743	WA 14574-97	2	39.1	85.1	68	77.2	1.3	2	12.1	4.05	33.9	76	45.2	566	23	16
1744	WA 14075-97	2	41.2	96.6	64	79.1	1.2	2	11.7	3.77	32.4	67	43.7	480	31	4
1745	WA 9960-97	2	38.7	92.1	68	78.0	1.8	2	11.7	3.85	34.1	71	48.1	476	25	11
1746	WA 8478-97	2	39.6	93.2	63	77.2	1.8	2	10.8	3.49	33.8	40	37.3	454	22	19
1747	WA 11618-97	2	38.1	83.9	61	77.6	1.8	2	11.8	3.63	31.7	61	44.8	484	20	23

Table 59

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	
			Weight 6/64"	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	S/T (°ASBC)	DP (20°DU)
1734	HARRINGTON MALT CHECK	2	40.3	94.8	77	81.6	1.4	2	11.4	5.29	48.1
										121	69.5
Minima			37.6	83.2	57	75.3	1.0		10.8	3.49	26.2
Maxima			45.8	98.1	75	80.1	2.9		14.4	4.78	41.3
Means			40.5	93.1	65	77.7	1.6		12.7	3.92	32.4
Standard Deviations			1.9	3.9	4	1.0	0.5		0.8	0.32	3.4
Coefficients of Variation			4.6	4.2	6	1.3	30.7		6.1	8.29	10.4
										28	12.8
											20
											31

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 MALT QTL NURSERY #1 - PULLMAN, WA

Table 60

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	S/T	DP	amylase	glucan			
1748	SO107	6	40.7	88.4	83	74.6	n.d.	3	10.7	3.59	34.9	52	37.1	718	20	13
1749	SO112	6	41.6	89.0	81	75.0	n.d.	3	10.9	3.91	37.2	55	40.0	717	24	10
1750	SO205	6	39.8	87.0	83	75.2	n.d.	3	11.0	3.67	36.5	48	35.1	716	20	13
1751	SO312	6	40.1	88.0	84	74.7	n.d.	3	10.4	3.42	34.5	45	36.5	624	15	33
1752	SO401	6	41.0	88.2	82	74.9	n.d.	3	10.7	3.59	35.8	43	33.5	682	20	13
1753	SO503	6	40.1	88.7	83	76.3	n.d.	3	10.0	3.78	41.4	43	39.6	445	20	13
1754	SO615	6	40.0	88.0	80	75.7	n.d.	3	10.4	3.94	41.1	50	43.1	528	24	10
1756	SO731	6	40.9	87.0	79	75.6	n.d.	3	10.8	4.13	42.2	45	40.7	654	29	9
1757	SO833	6	38.7	86.3	82	74.1	n.d.	3	11.5	3.83	33.3	52	37.1	890	20	13
1758	SO911	6	37.7	84.9	80	74.0	n.d.	3	12.7	4.07	32.4	56	38.9	792	15	33
1759	S1101	6	37.8	82.0	78	73.1	n.d.	3	12.4	3.65	29.4	51	35.0	919	20	13
1760	S1235	6	37.3	84.0	81	75.2	n.d.	3	10.3	3.79	36.9	43	38.5	688	15	33
1761	S1345	6	37.7	85.0	83	75.3	n.d.	3	10.7	3.79	36.3	48	38.4	730	20	13
1762	S1445	6	34.9	79.6	85	74.4	n.d.	3	10.6	3.99	38.5	45	38.6	652	20	13
1763	S1543	6	40.5	89.7	72	73.8	n.d.	3	12.8	4.09	32.3	75	38.9	534	15	33
1764	SB4414	6	42.3	87.8	74	75.3	n.d.	3	10.6	3.78	36.8	60	39.5	610	20	13
1765	SO901	6	40.3	85.7	80	74.1	n.d.	3	12.1	3.55	29.5	50	35.4	771	20	13
1766	SO103	6	41.0	90.7	77	73.9	n.d.	3	11.7	3.80	33.6	55	37.6	698	20	13
1767	SO219	6	41.7	90.7	80	74.2	n.d.	3	11.9	3.48	30.8	37	32.2	796	20	13
1768	SO317	6	40.8	85.8	81	74.1	n.d.	3	11.4	3.62	32.7	49	34.3	721	20	13
1769	SO405	6	41.9	87.9	87	75.0	n.d.	3	10.3	3.41	35.7	40	33.4	680	15	33
1770	SO527	6	40.5	88.8	85	75.2	n.d.	3	10.7	3.71	36.1	45	33.0	651	20	13
1771	SO634	6	41.5	90.6	77	74.3	n.d.	3	12.3	4.08	34.3	62	37.7	668	20	13
1772	SO707	6	41.6	90.0	78	75.3	n.d.	3	11.3	3.75	35.2	45	37.2	484	20	13
1773	SO875	6	39.0	89.6	85	74.6	n.d.	3	11.2	3.76	36.4	48	34.0	618	20	13
1774	SO904	6	39.5	85.6	84	75.0	n.d.	3	10.2	3.75	39.4	48	36.7	597	15	33
1775	S1111	6	39.3	85.2	85	74.3	n.d.	3	10.5	3.31	32.3	39	30.4	707	15	33
1776	S1229	6	39.9	92.1	84	74.2	n.d.	3	11.8	3.67	33.7	49	31.9	777	20	13
1777	S1343	6	39.4	89.2	80	73.7	n.d.	3	11.3	3.92	36.5	42	37.4	587	20	13
1778	STEPTOE	6	42.6	89.7	83	73.8	n.d.	3	11.7	3.50	32.1	53	33.7	867	20	13

Table 60

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt		Barley	Wort	S/T	DP	Alpha-	Beta-	Overall		
			Weight (mg)	6/64"	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)	(%)	(°ASBC)	(20°DU)	amylase (ppm)	glucan	
1779	M0107	6	36.5	85.0	77	78.9	2.5	2	13.4	5.51	42.9	150	54.1	125	49	2
1781	M0108	6	34.9	76.0	80	79.5	n.d.	3	13.3	5.27	41.2	147	59.5	303	43	4
1782	M0208	6	35.0	79.3	79	79.9	2.2	2	13.5	5.50	41.6	185	58.2	231	38	5
1783	M0307	6	33.4	*57.5	75	78.2	n.d.	3	13.5	5.22	39.2	159	53.9	317	35	8
1784	M0402	6	34.1	67.6	80	79.3	n.d.	3	11.6	5.02	44.0	131	53.9	354	45	3
1785	M0549	6	34.2	80.0	82	80.0	n.d.	3	11.7	4.91	42.4	132	52.3	308	53	1
1786	M0641	6	36.6	79.0	75	78.4	n.d.	3	13.5	5.24	40.5	188	51.5	311	38	5
1787	M0703	6	35.5	68.0	74	78.7	1.8	2	14.3	5.47	39.4	164	58.2	240	24	10
1788	M0923	6	35.0	76.5	79	80.9	2.1	2	13.6	5.80	45.7	136	62.3	319	36	7
1755	MOREX MALT CHECK	6	31.6	74.1	70	80.7	1.8	1	12.3	5.98	50.7	132	71.0	286	39	
1780	MOREX MALT CHECK	6	32.0	74.0	71	80.2	2.0	1	12.3	6.03	51.8	136	72.5	173	36	
Minima			33.4	67.6	72	73.1	1.8		10.0	3.31	29.4	37	30.4	125	15	
Maxima			42.6	92.1	87	80.9	2.5		14.3	5.80	45.7	188	62.3	919	53	
Means			38.8	85.2	80	75.7	2.2		11.6	4.11	36.8	73	41.0	591	24	
Standard Deviations			2.6	5.8	4	2.1	0.3		1.2	0.71	4.1	47	8.9	201	10	
Coefficients of Variation			6.8	6.8	4	2.8	13.2		9.9	17.32	11.2	63	21.6	34	42	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 MALT QTL NURSERY #2 - PULLMAN, WA

Table 61

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (20°DU)	glucan (ppm)	Quality Score	Rank	
1789	M1115	6	35.9	71.5	74	79.1	2.2	2	13.4	4.91	38.3	151	54.2	310	42	14
1790	M1219	6	36.4	70.6	75	79.3	n.d.	3	13.6	5.09	39.0	137	53.5	340	38	21
1791	M1303	6	36.0	75.5	75	77.7	2.3	1	14.3	5.14	36.4	133	50.3	445	28	24
1792	M1415	6	36.4	73.2	78	80.0	2.6	2	12.0	4.91	42.5	142	54.7	296	58	1
1793	M1502	6	35.6	80.1	78	79.6	n.d.	3	12.4	4.89	41.4	94	49.9	543	46	5
1794	M1563	6	35.8	92.3	82	79.7	n.d.	3	13.1	5.36	43.5	100	51.0	531	37	22
1795	M1521	6	36.6	82.8	75	79.1	2.6	2	14.0	5.20	39.3	142	55.0	393	44	6
1796	M0109	6	35.3	81.3	71	78.7	1.9	1	14.5	5.71	40.2	168	56.9	231	35	23
1797	M0105	6	34.9	75.8	74	79.4	2.2	1	14.1	6.09	45.0	208	57.1	369	26	29
1798	M0223	6	36.6	86.8	77	78.9	n.d.	3	14.0	5.46	42.0	155	49.5	212	44	6
1799	M0403	6	32.5	65.1	78	79.1	n.d.	3	11.6	4.94	42.8	129	47.9	256	44	6
1800	M0542	6	34.0	73.4	81	80.6	n.d.	3	11.6	5.20	45.2	104	50.9	305	47	3
1801	M0621	6	37.1	80.4	73	78.7	n.d.	3	13.4	4.96	39.2	148	50.6	241	43	12
1803	M0710	6	35.7	69.8	74	77.9	1.9	2	13.5	5.12	39.4	129	54.8	257	28	24
1804	M0902	6	35.3	74.4	77	79.6	2.1	2	13.3	5.55	42.5	137	54.5	218	43	12
1805	M1128	6	37.1	80.2	77	79.2	n.d.	3	12.5	4.61	39.2	155	48.3	221	51	2
1806	M1228	6	36.8	69.0	79	79.6	n.d.	3	11.6	4.63	41.6	110	52.5	212	44	6
1807	M1324	6	35.2	77.3	80	76.6	1.9	2	14.1	5.00	37.6	123	50.3	339	25	30
1808	M1444	6	36.9	77.2	77	78.3	2.2	2	13.5	5.57	43.4	139	50.1	377	39	20
1809	MOREX	6	35.5	81.1	80	79.9	1.9	2	12.7	5.38	43.7	134	55.5	229	42	14
1810	SO312	6	41.4	89.2	80	74.6	n.d.	3	10.8	3.66	36.5	45	32.2	955	20	32
1811	M0403	6	33.7	70.3	81	78.9	2.4	2	11.1	4.99	47.1	115	48.8	321	40	18
1812	M1115	6	36.2	78.4	74	78.8	2.0	2	12.4	4.84	40.9	125	51.8	313	44	6
1813	M0107	6	33.6	70.1	75	78.5	1.8	2	13.4	5.25	41.2	138	53.4	212	44	6
1814	M1219	6	35.4	65.4	76	77.6	2.0	2	13.0	4.64	37.0	123	54.3	297	28	24
1815	M1563	6	33.7	80.2	82	79.1	2.3	2	13.0	5.15	40.7	96	53.8	316	42	14
1816	M0923	6	35.4	78.6	77	79.7	2.2	2	12.8	5.35	42.3	134	55.3	262	42	14
1817	S1343	6	38.3	84.9	85	75.5	n.d.	3	10.7	3.81	37.4	42	35.9	499	20	32
1818	M0641	6	34.7	73.7	72	77.4	2.2	2	13.8	5.26	38.6	189	50.0	337	28	24
1819	SO731	6	40.9	87.4	76	74.5	3.8	2	12.0	3.97	33.4	46	38.3	717	21	31

Table 61

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		amylase (ppm)	glucan	Quality	Score	Rank
1820	SO405	6	39.2	79.9	82	74.8	n.d.	3	10.4	3.52	34.8	41	33.1	615	15	39
1821	STEPTOE	6	39.7	85.9	83	74.8	n.d.	3	10.7	3.49	34.9	43	30.5	776	20	32
1822	SO107	6	42.2	93.1	83	74.7	n.d.	3	11.1	3.66	34.6	53	33.4	827	20	32
1824	M0307	6	32.4	*50.3	76	79.9	n.d.	3	13.4	5.20	41.8	131	54.0	312	40	18
1825	M1324	6	34.1	70.0	77	77.5	2.1	2	13.2	4.77	36.6	110	54.3	327	28	24
1826	SO112	6	42.3	90.4	79	75.0	n.d.	3	11.1	3.67	35.4	52	35.2	803	20	32
1827	M1521	6	36.3	76.4	80	80.1	n.d.	3	12.3	5.04	43.0	123	53.4	337	47	3
1828	SO911	6	38.2	85.2	83	75.2	n.d.	3	11.4	3.93	37.5	51	36.1	592	20	32
1829	SO634	6	39.2	83.4	80	73.1	n.d.	3	11.1	3.75	34.0	56	38.7	593	20	32
1802	MOREX MALT CHECK	6	32.3	72.2	72	79.9	1.9	1	12.3	5.84	48.8	120	66.7	162	33	
1823	MOREX MALT CHECK	6	31.4	73.7	73	80.4	1.8	1	12.4	5.84	51.1	134	65.3	157	39	
Minima			32.4	65.1	71	73.1	1.8		10.4	3.49	33.4	41	30.5	212	15	
Maxima			42.3	93.1	85	80.6	3.8		14.5	6.09	47.1	208	57.1	955	58	
Means			36.5	78.4	78	78.0	2.2		12.6	4.81	39.7	114	48.5	404	35	
Standard Deviations			2.4	7.3	3	2.0	0.4		1.2	0.68	3.4	43	8.0	197	11	
Coefficients of Variation			6.7	9.3	4	2.6	19.5		9.3	14.07	8.6	38	16.5	49	32	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 MALT QTL NURSERY #3 - PULLMAN, WA

Table 62

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight	6/64"	Color	Extract	Wort	Wort	Protein	S/T	DP	amylase	glucan	Quality	Score	Rank
1830	M1128	6	35.0	68.5	71	78.9	2.4	2	13.1	4.85	37.9	169	53.9	260	36	11
1831	S1229	6	37.7	85.1	85	74.3	n.d.	3	10.5	3.68	35.2	47	32.7	719	15	38
1832	M0109	6	33.1	61.0	79	78.6	2.0	2	13.1	5.03	40.1	138	52.0	165	41	7
1833	M0621	6	35.6	68.0	75	77.9	2.2	2	13.8	4.87	37.0	164	53.0	300	29	16
1834	M208	6	31.8	47.3	84	79.9	2.2	2	12.1	5.22	45.6	153	55.8	132	52	2
1835	S0901	6	38.6	79.2	85	74.5	n.d.	3	10.3	3.19	31.5	45	33.2	610	15	38
1836	S0401	6	41.6	86.9	87	74.3	n.d.	3	10.7	3.33	33.4	44	32.8	685	20	21
1837	S1235	6	37.3	78.6	85	73.3	n.d.	3	12.1	3.64	31.6	52	33.3	879	20	21
1838	M0105	6	34.3	70.2	79	77.8	n.d.	3	13.2	5.06	40.3	151	51.4	230	42	5
1839	S1543	6	41.5	89.5	76	74.7	n.d.	3	12.4	3.76	32.9	64	38.9	475	20	21
1840	M1415	6	35.9	70.0	80	78.1	2.9	2	12.2	4.66	38.8	129	54.9	279	40	8
1841	M0710	6	37.5	79.6	76	78.7	2.5	2	12.6	4.53	37.7	119	55.8	199	27	17
1842	S0707	6	42.6	91.2	80	74.8	n.d.	3	11.5	3.63	34.1	45	37.8	653	20	21
1843	S0103	6	41.3	89.1	77	74.1	n.d.	3	12.0	3.69	32.1	51	36.9	672	20	21
1845	S0615	6	41.2	90.5	78	75.3	n.d.	3	11.6	4.28	40.0	54	50.1	362	32	13
1846	S1345	6	38.0	81.5	82	73.8	n.d.	3	11.5	3.51	30.6	46	37.1	569	20	21
1847	M1502	6	35.1	76.9	80	77.6	n.d.	3	13.0	4.69	36.1	91	45.7	471	27	17
1848	M1444	6	35.5	67.2	80	78.7	3.0	2	12.3	4.98	42.5	134	53.1	268	46	3
1849	M1303	6	34.6	65.9	82	75.7	2.4	2	13.8	4.53	33.8	123	49.9	325	18	36
1850	M0549	6	32.7	65.2	79	79.2	2.6	2	13.1	4.76	37.3	123	52.7	210	35	12
1851	MOREX	6	33.2	72.0	72	79.8	2.2	1	14.5	5.92	43.6	165	66.5	159	32	13
1852	S1111	6	38.0	80.8	83	74.2	n.d.	3	10.8	3.43	32.3	40	35.1	509	20	21
1853	S0503	6	40.9	88.0	84	75.4	n.d.	3	10.8	3.77	37.6	45	38.1	520	20	21
1854	S0219	6	39.0	84.4	77	75.2	n.d.	3	10.8	3.54	34.6	40	35.8	613	20	21
1855	S0205	6	40.4	87.9	77	74.4	n.d.	3	11.4	3.62	33.0	44	36.1	614	20	21
1856	S1445	6	37.4	84.6	84	74.2	n.d.	3	11.4	3.89	35.8	44	36.9	651	20	21
1857	S1101	6	39.7	93.7	84	74.5	n.d.	3	10.6	3.40	32.3	43	31.1	651	20	21
1858	M0542	6	35.2	82.4	75	79.3	n.d.	3	13.5	4.88	37.7	131	47.6	321	40	8
1859	S0904	6	39.2	90.6	77	73.9	n.d.	3	12.0	3.71	32.0	55	34.8	622	20	21
1860	M0703	6	35.3	73.1	84	78.4	1.8	2	13.5	5.19	38.5	146	55.4	267	39	10

Table 62

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Overall					
			Weight 6/64"	(mg)	Color (Agtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)		Score	Rank			
1861	SB4414	6	40.6	87.4	75	74.7	n.d.	3	11.3	3.48	33.3	53	41.2	594	24	20
1862	M0402	6	34.5	71.9	76	78.9	2.3	1	13.0	5.47	42.3	143	52.4	272	44	4
1863	S0875	6	38.6	87.0	84	74.3	n.d.	3	10.5	3.64	35.0	43	33.5	530	15	38
1864	S0527	6	39.9	85.2	81	73.2	n.d.	3	11.5	3.51	31.6	48	32.4	561	20	21
1866	M0108	6	32.9	57.4	75	76.2	n.d.	3	13.5	4.25	34.3	89	46.1	425	17	37
1867	S0833	6	37.0	58.3	84	76.7	n.d.	3	11.1	4.40	41.6	100	49.2	310	27	17
1868	M0223	6	34.2	74.3	76	80.3	1.8	1	12.4	5.28	45.6	152	60.0	143	56	1
1869	M1228	6	35.7	63.7	74	78.2	1.9	1	13.2	4.97	39.8	123	58.1	192	30	15
1870	S0317	6	40.2	85.3	77	73.2	n.d.	3	11.7	3.34	29.5	50	34.1	665	20	21
1871	M0902	6	35.7	78.1	74	79.8	1.8	1	13.3	5.81	44.7	141	65.6	168	42	5
1844	MOREX MALT CHECK	6	31.7	73.3	69	79.7	1.8	1	12.7	5.51	46.9	120	66.1	355	24	
1865	MOREX MALT CHECK	6	31.5	69.4	72	80.1	2.0	1	12.4	5.91	50.6	122	70.7	171	32	
Minima			31.8	47.3	71	73.2	1.8		10.3	3.19	29.5	40	31.1	132	15	
Maxima			42.6	93.7	87	80.3	3.0		14.5	5.92	45.6	169	66.5	879	56	
Means			37.2	77.4	79	76.4	2.3		12.1	4.29	36.6	91	45.0	431	28	
Standard Deviations			2.9	11.1	4	2.3	0.4		1.1	0.77	4.4	47	10.3	203	11	
Coefficients of Variation			7.8	14.3	5	3.0	16.9		9.2	18.02	12.0	52	22.8	47	39	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by S.E. Ullrich, Washington State University - Pullman

2000 SINGLE REP NURSERY #1 AND #2 - PULLMAN, WA

Table 63

Lab No.	Variety or Selection	Rowed	Kernel	on	Barley	Malt	Barley	Wort	Alpha-	Beta-	Quality	Overall				
			Weight (mg)	6/64" (%)	Color (Agrtron)	Extract (%)	Wort Color	Wort Clarity	Protein (%)	Protein (%)						
2428	2000NZ16	2	35.9	88.7	76	80.9	2.1	2	12.0	5.39	47.3	138	78.9	176	31	20
2429	2000NZ191	2	35.5	87.7	68	77.0	2.1	1	12.6	5.13	42.5	111	61.4	490	25	33
2430	2000NZ368	2	38.0	95.0	70	79.3	1.5	1	12.8	4.34	35.3	84	60.5	367	16	46
2431	2000NZ278	2	38.2	94.6	54	78.4	n.d.	3	13.7	4.19	31.1	103	40.5	395	22	36
2433	2000NZ042	2	32.8	65.9	81	79.3	1.9	1	11.7	5.09	44.4	145	72.1	239	31	20
2434	2000NZ304	2	39.3	94.9	54	78.6	n.d.	3	12.1	3.42	29.7	62	45.8	373	28	27
2435	2000NZ018	2	36.0	85.4	78	81.0	2.4	1	12.1	5.65	48.2	127	95.8	291	35	5
2436	2000NZ255	2	35.5	85.4	45	78.3	n.d.	3	13.7	3.98	29.7	95	17.4	463	11	49
2437	2000NZ370	2	35.7	91.5	69	79.3	n.d.	3	12.7	4.19	33.9	84	59.3	327	14	48
2438	2000NZ223	2	41.5	95.3	63	79.7	1.5	1	13.8	4.97	36.5	112	79.6	225	35	5
2439	2000NZ316	2	32.9	73.0	65	78.4	n.d.	3	12.3	3.33	28.6	72	50.1	493	18	45
2440	2000NZ333	2	36.2	89.5	82	80.3	2.2	1	12.9	5.47	44.0	126	72.3	362	32	13
2441	2000NZ348	2	37.4	89.3	75	79.3	2.1	2	12.7	4.79	38.8	127	57.7	280	30	24
2442	2000NZ103	2	31.4	71.8	77	79.3	1.7	1	12.3	4.42	36.9	125	63.2	263	33	10
2443	2000NZ399	2	36.2	87.2	69	81.0	1.5	1	12.9	4.59	37.2	105	88.1	295	34	9
2444	2000NZ090	2	33.7	*64.5	77	79.6	2.2	2	12.7	5.77	46.1	115	77.1	298	26	29
2445	2000NZ307	2	36.2	78.3	65	77.7	1.4	1	12.6	3.72	30.0	94	51.4	396	11	49
2446	2000NZ250	2	37.2	83.4	58	78.6	1.8	1	14.1	4.51	32.4	130	61.6	329	20	42
2447	2000NZ363	2	35.0	91.0	70	80.4	1.7	1	12.6	4.80	40.0	95	87.4	90	42	1
2448	2000NZ400	2	36.2	90.5	69	80.9	1.4	1	13.7	4.63	35.8	107	80.8	309	25	33
2449	2000NZ136	2	33.1	*53.6	87	81.1	2.2	1	12.1	5.49	48.7	133	96.6	206	32	13
2450	2000NZ288	2	38.5	89.7	60	78.6	n.d.	3	12.1	3.56	29.4	80	44.9	588	26	29
2451	2000NZ293	2	37.9	93.3	65	79.8	n.d.	3	12.2	3.38	28.8	67	46.9	374	29	26
2452	2000NZ195	2	35.6	90.0	72	78.3	2.4	2	12.6	4.55	38.0	99	66.7	452	26	29
2454	2000NZ197	2	35.8	87.6	77	78.5	2.2	2	11.8	5.00	42.8	97	58.4	287	37	3
2455	2000NZ673	2	35.1	87.6	60	80.6	1.9	2	13.2	4.56	35.3	87	59.3	204	26	29
2456	2000NZ762	2	33.6	83.3	70	80.2	1.3	1	11.7	3.43	30.0	84	58.8	393	19	43
2457	2000NZ817	2	40.6	95.7	64	80.5	1.5	1	15.2	5.34	36.2	143	59.6	530	21	38
2458	2000NZ803	2	35.4	94.5	76	81.5	2.7	1	12.7	6.28	49.9	111	74.6	202	32	13
2459	2000NZ705	2	38.6	93.8	50	79.7	1.9	1	13.2	4.28	33.4	87	45.4	383	28	27

Table 63

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (%)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
2460	2000NZ507	2	38.5	91.6	68	80.8	1.5	1	13.1	4.43	35.2	107	64.4	391	32	13
2461	2000NZ456	2	36.5	88.1	65	81.9	2.1	1	12.8	5.83	45.6	97	78.6	454	32	13
2462	2000NZ788	2	36.3	93.4	59	79.9	1.8	1	13.4	4.42	34.3	99	62.7	189	33	10
2463	2000NZ812	2	34.4	85.6	67	81.9	1.7	1	12.9	4.64	37.7	93	61.8	296	30	24
2464	2000NZ515	2	38.7	92.7	70	81.3	1.6	1	12.5	4.61	38.9	98	69.5	294	38	2
2465	2000NZ520	2	37.3	86.1	69	80.5	1.4	1	13.1	4.59	37.6	115	68.7	374	31	20
2466	2000NZ469	2	32.6	74.8	72	80.8	1.3	1	13.0	4.17	32.4	103	61.6	268	21	38
2467	HARRINGTON	2	37.9	90.3	65	80.5	1.5	1	12.9	4.45	37.3	113	63.7	380	33	10
2468	2000NZ538	2	40.0	93.2	68	80.0	1.4	1	13.3	4.52	35.3	120	68.0	382	35	5
2469	2000NZ487	2	34.6	*46.2	68	*74.7	*3.8	2	15.3	4.46	29.8	102	43.9	520	19	43
2470	2000NZ687	2	37.5	93.1	52	79.1	2.8	2	13.8	4.48	33.3	107	45.9	266	31	20
2471	2000NZ645	2	40.9	92.7	60	80.2	2.0	1	12.3	3.93	33.1	94	43.9	355	35	5
2472	2000NZ839	2	42.6	93.9	67	79.4	1.4	1	13.4	4.08	31.6	93	68.6	532	21	38
2473	2000NZ740	2	39.4	95.7	54	78.7	1.5	1	13.9	4.22	32.0	117	67.9	253	23	35
2475	2000NZ704	2	39.4	95.0	62	79.4	2.4	2	12.3	3.43	29.0	88	42.7	336	32	13
2476	2000NZ753	2	37.8	93.1	57	78.2	1.6	1	13.7	4.19	32.2	98	45.6	429	22	36
2477	2000NZ514	2	40.4	93.6	65	79.5	1.4	1	14.0	4.50	33.0	119	62.2	413	32	13
2478	2000NZ721	2	38.6	93.0	58	77.7	2.3	2	14.3	3.53	25.0	102	37.3	545	16	46
2479	2000NZ749	2	35.7	85.2	64	80.4	1.2	1	13.1	3.94	31.5	82	51.0	355	21	38
2480	2000NZ647	2	42.9	96.0	60	79.7	1.8	1	13.9	5.12	37.8	111	47.6	425	36	4
2432	HARRINGTON MALT CHECK	2	38.3	95.7	71	80.8	1.5	1	12.0	5.46	48.0	127	73.0	90	43	
2453	HARRINGTON MALT CHECK	2	39.8	95.3	75	81.8	1.6	1	11.9	5.27	48.4	124	82.0	80	42	
2474	HARRINGTON MALT CHECK	2	39.3	95.1	74	81.1	1.4	1	11.8	4.74	43.6	117	69.9	192	51	
Minima			31.4	65.9	45	77.0	1.2		11.7	3.33	25.0	62	17.4	90	11	
Maxima			42.9	96.0	87	81.9	2.8		15.3	6.28	49.9	145	96.6	588	42	
Means			36.9	89.0	66	79.7	1.8		13.0	4.52	36.1	104	61.4	351	27	
Standard Deviations			2.6	6.8	9	1.1	0.4		0.8	0.69	6.0	19	15.7	107	7	
Coefficients of Variation			7.0	7.6	13	1.4	22.4		6.2	15.27	16.7	18	25.6	31	27	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics

For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. vonWettstein, Washington State University - Pullman

2000 HB QTL REGULAR MALTING ANALYSIS - PULLMAN, WA

Table 64

Lab No.	Variety or Selection	Rowed	Kernel Weight 6/64"	on (mg)	Barley Color (Agtron)	Malt Extract (%)	Wort Color (%)	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (°ASBC)	DP	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
3464	NZDK 7	2	39.8	66.1	73	73.9	1.1	1	17.4	4.81	28.2	126	49.5	500	25	4
3465	NZDK 14	2	39.7	75.3	65	76.0	1.4	1	17.3	5.89	34.4	130	65.1	353	14	28
3466	NZDK 50	2	40.3	81.9	70	76.7	1.3	1	16.6	5.48	33.5	133	65.6	466	13	33
3467	NZDK 53	2	43.0	82.9	71	77.2	1.6	1	15.8	5.82	36.8	135	76.7	381	14	28
3468	NZDK 55	2	40.5	83.7	71	76.4	1.7	1	16.6	6.01	36.4	143	75.8	406	6	54
3469	NZDK 56	2	42.6	96.8	71	77.6	1.4	1	17.3	5.68	33.5	139	74.3	493	19	14
3470	NZDK 59	2	42.0	90.4	74	76.3	1.4	1	15.2	5.20	35.5	137	65.2	463	19	14
3472	NZDK 62	2	40.5	85.4	72	75.6	1.2	1	16.4	5.28	32.5	148	61.1	452	12	36
3473	NZDK 64	2	40.1	86.0	70	75.7	1.4	1	17.4	6.03	34.7	143	72.9	375	9	43
3474	NZDK 91	2	39.5	72.6	67	74.6	1.4	1	16.1	5.37	34.2	149	70.6	484	7	48
3475	NZDK 94	2	40.3	77.9	68	76.2	1.4	1	15.9	5.28	34.2	110	63.4	539	16	21
3476	NZDK 96	2	41.8	83.6	69	76.1	1.4	1	17.8	5.73	33.1	140	73.5	474	9	43
3477	NZDK 97	2	41.3	83.4	72	77.1	1.4	1	17.8	5.70	32.8	137	70.9	447	13	33
3478	NZDK 98	2	42.8	88.9	76	79.3	1.4	1	15.3	5.75	38.2	128	70.0	433	24	6
3479	HARRINGTON	2	41.3	86.0	77	77.4	1.1	1	15.8	5.37	35.0	141	71.7	469	12	36
3480	BARONESSE	2	45.8	88.6	70	72.3	n.d.	3	16.5	4.22	25.6	119	46.1	618	22	8
3481	NZDK 00-106	2	40.4	72.3	73	75.8	1.1	1	16.7	5.12	30.8	142	63.2	518	9	43
3482	NZDK 00-107	2	39.2	67.8	69	76.5	1.2	1	16.4	5.16	32.4	129	64.6	512	14	28
3483	NZDK 00-108	2	39.4	68.8	68	75.7	1.2	1	17.0	5.24	31.8	141	68.9	537	7	48
3484	NZDK 00-109	2	39.1	71.5	75	75.0	1.2	1	17.1	5.23	31.1	116	61.9	579	14	28
3485	NZDK 00-110	2	39.0	77.3	70	76.4	1.2	1	15.6	5.32	34.3	113	64.3	502	14	28
3486	NZDK 00-111	2	39.4	78.1	74	76.0	1.1	1	16.2	5.08	32.0	124	62.6	562	18	18
3487	NZDK 00-117	2	42.2	77.5	68	76.3	1.2	1	16.2	5.33	33.6	141	71.4	537	10	41
3488	NZDK 00-123	2	41.5	79.5	73	77.8	1.1	1	16.1	5.38	33.6	146	71.5	400	9	43
3489	HARRINGTON	2	42.7	88.8	72	77.6	1.1	1	15.8	5.20	33.6	144	68.7	526	13	33
3490	BARONESSE	2	45.4	89.9	66	71.9	*2.2	2	16.8	4.40	26.3	136	45.2	566	20	11
3492	NZDK 00-131	2	41.0	78.6	68	78.1	1.4	1	15.5	5.37	35.2	132	61.5	504	17	19
3493	NZDK 00-132	2	41.9	89.0	74	78.9	1.3	1	14.7	5.33	36.8	128	62.4	458	23	7
3494	NZDK 00-135	2	42.2	85.3	73	77.3	1.2	1	14.6	5.07	35.3	135	63.6	445	21	10
3495	NZDK 00-137	2	41.3	82.6	71	76.3	1.2	1	16.8	5.38	32.2	142	61.4	513	9	43

Table 64

Lab No.	Variety or Selection	Rowed	Kernel Weight (mg)	on 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein (%)	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	Quality Score	Overall Rank
3496	NZDK 00-139	2	41.5	84.9	73	77.1	1.1	1	15.4	5.07	34.0	138	57.8	506	17	19
3497	NZDK 00-145	2	38.6	78.2	66	75.1	1.2	1	17.9	5.41	30.4	156	60.0	511	7	48
3498	NZDK 00-146	2	41.5	86.5	72	77.1	1.3	1	16.6	5.69	35.2	149	60.5	467	12	36
3499	NZDK 00-147	2	41.3	86.5	68	76.9	1.4	1	16.7	5.81	35.8	156	64.2	443	12	36
3500	NZDK 00-148	2	40.9	87.2	73	77.5	1.2	1	16.0	5.32	33.5	138	58.2	664	16	21
3501	NZDK 00-150	2	41.6	89.6	68	78.5	1.3	1	16.0	5.63	36.5	131	58.6	543	20	11
3502	NZDK 00-151	2	40.5	85.8	*60	76.8	1.3	1	16.9	5.44	32.9	131	57.2	635	16	21
3503	NZDK 00-153	2	40.8	86.3	74	77.9	1.1	1	14.8	5.09	34.7	129	54.5	593	27	1
3504	NZ 00-154	2	39.2	83.0	69	77.1	1.3	1	15.6	5.33	34.9	143	59.9	477	7	48
3505	NZDK 00-155	2	38.9	80.9	67	76.4	1.2	1	17.0	5.64	33.2	162	63.3	467	7	48
3506	HARRINGTON	2	41.3	86.4	74	78.6	1.3	1	15.2	5.59	37.9	137	66.9	401	20	11
3507	BARONESSE	2	45.4	85.3	62	*71.1	*2.3	2	19.1	4.95	26.1	140	47.7	514	27	1
3508	NZDK 00-160	2	39.5	79.6	73	77.2	1.1	1	15.8	5.20	33.6	149	58.4	511	7	48
3509	NZDK 00-156	2	40.4	86.6	72	77.1	1.2	1	16.5	5.37	33.9	144	61.3	481	12	36
3510	NZDK 00-165	2	43.4	90.9	76	77.7	1.3	1	15.9	5.83	38.2	135	70.7	414	19	14
3511	NZDK 00-166	2	42.2	91.2	74	77.7	1.5	1	16.4	6.24	38.7	136	74.0	395	16	21
3512	NZDK 00-168	2	42.4	91.3	72	78.2	1.5	1	16.5	5.93	37.1	143	72.3	328	19	14
3514	NZDK 00-169	2	39.6	88.1	70	77.9	1.4	1	16.9	5.99	36.8	142	70.0	351	10	41
3515	NZDK 00-170	2	40.5	88.3	69	79.4	1.6	1	15.2	5.98	41.2	131	74.3	337	25	4
3516	NZDK 00-171	2	44.4	90.3	70	78.0	1.5	1	15.7	5.72	38.0	117	64.3	422	22	8
3517	NZDK 00-173	2	42.9	91.1	72	76.8	1.2	1	16.2	5.48	34.3	150	63.2	355	15	27
3518	NZDK 00-174	2	40.1	87.6	69	77.4	1.4	1	16.4	5.66	34.7	135	66.5	411	16	21
3519	HARRINGTON	2	41.6	87.1	73	78.2	1.3	1	15.5	5.72	37.9	148	71.1	391	16	21
3520	BARONESSE	2	44.0	85.8	66	71.3	1.9	2	18.2	4.54	25.3	133	47.7	534	27	1
3471	HARRINGTON MALT CHECK	2	39.7	94.4	74	81.1	1.7	1	11.7	5.52	51.0	118	73.5	86	46	
3491	HARRINGTON MALT CHECK	2	39.8	93.5	76	80.9	1.5	1	11.6	5.37	50.8	107	67.0	207	36	
3513	HARRINGTON MALT CHECK	2	39.7	94.3	75	81.7	1.4	1	11.4	5.51	50.2	107	68.3	123	43	
Minima			38.6	66.1	62	71.3	1.1		14.6	4.22	25.3	110	45.2	328	6	
Maxima			45.8	96.8	77	79.4	1.9		19.1	6.24	41.2	162	76.7	664	27	
Means			41.3	83.6	71	76.7	1.3		16.3	5.42	33.9	137	64.2	475	15	
Standard Deviations			1.7	6.6	3	1.6	0.2		0.9	0.40	3.3	11	7.7	76	6	
Coefficients of Variation			4.1	7.9	4	2.1	13.2		5.6	7.41	9.7	8	11.9	16	38	

Malt Check Data are Excluded from Rank Sorting and Statistics

Table Data Flagged by an Asterisk Exceed the Mean by +/- 3 Standard Deviations and are Excluded from Statistics
For Wort Clarity - 1 = clear, 2 = slightly hazy, 3 = hazy; Wort Colors were not determined (n.d.) on hazy samples

Samples Submitted by D. Schierer and S.E. Ullrich, Washington State University - Pullman

Appendix A: METHODS

Cleaning All samples were cleaned on a Carter Dockage Tester and any material not retained on a 5/64" screen was discarded.

Barley Mill Ground barley was prepared with a Labconco Burr mill that was adjusted so that only 35% of the grist remained on a 525 µm sieve after 3 min of shaking and tapping.

Kernel Weight The number of kernels in a 20 g aliquot of each sample was counted electronically and the '1000 kernel weight' was calculated.

Plumpness Samples were sized on a Eureka-Niagra Barley Grader and the percentage of the seeds retained on a 6/64" screen was determined.

Barley Color The brightness of the grains was measured using an Agtron M31A analyzer.

Barley Moisture Content Five g of ground sample was dried for 3 h at 106°C. The percentage of weight loss that occurred during this drying was calculated.

Barley Protein Content Total nitrogen values were obtained using an automated Dumas combustion procedure with a LECO FP-528 analyzer. Nitrogen values were converted to protein percentages by multiplication by 6.25.

Malting Conditions 170 g (db) barley samples were steeped at 16°C for 32-48 h, to 45% moisture, by alternating 4 h of wet steep with 4 h of air rest. The steeped samples were placed in a chamber for 5 d at 17°C and near 100% R.H., in cans that were rotated for 3.0 min every 30 min. The germinated grain (green malt) was kilned for 24 h as follows: 0.5 h from 25°C to 49°C, 9.5 h at 49°C, 0.5 h from 49°C to 54°C, 4.0 h at 54°C, 0.5 h from 54°C to 60°C, 3.0 h at 60°C, 0.5 h from 60°C to 68°C, 2.0 h at 68°C, 0.5h from 68°C to 85°C, and 3.0 h at 85°C.

Malt Mill Fine-grind malts were prepared with a Miag laboratory cone mill that was adjusted so that 10% of the grist remained on a 525 µm sieve after 3 min of shaking, with tapping. Coarse-grind malts were prepared with a corrugated roll mill that was adjusted so that 75% of the grist remained on a 525 µm sieve. Ground malts for moisture, protein and amyloytic activity analyses were ground in a Labconco Burr mill (see Barley Mill).

Malt Moisture Content See Barley Moisture Content.

Malt Protein Content See Barley Protein Content.

Malt Extract The finely ground samples were extracted using the Malt-4 procedure (Methods of Analysis of the ASBC, 8th Ed., 1992), except that all weights and volumes specified for the method were halved. The specific gravity of the filtrate was measured with an Anton/Parr DMA5000 density meter. The density data were used to calculate the amount of soluble material present in the filtrate, and thus the percentage that was extracted from the malt.

Wort Color was determined on a Skalar SAN plus analyzer by subtracting the absorbance at 700 nm from that at 430 nm and dividing by a factor that was determined by comparison with values obtained in a collaborative test.

Wort Clarity was assessed by visual inspection.

b-Glucan Levels were determined on a Skalar SAN plus analyzer by using the Wort-18 fluorescence flow injection analysis method with calcofluor as the fluorescent agent (Methods of Analysis of the ASBC, 8th Ed., 1992).

Soluble (Wort) Protein Levels were determined on a Skalar SAN plus analyzer using the Wort-17 UV-spectrophotometric method (Methods of Analysis of the ASBC, 8th Ed., 1992).

S/T Ratio was calculated as Soluble Protein / Total Malt Protein

Diastatic Power Values were determined on a Skalar SAN plus analyzer by the automated ferricyanide procedure Malt-6A (Methods of Analysis of the ASBC, 8th Ed., 1992).

a-Amylase activities were measured on a Skalar SAN plus analyzer by heating the extract to 73°C to inactivate any β-amylase present. The remaining (α-amylase) activity was measured as described for Diastatic Power Values.

Quality Scores were calculated by using a modification of the method of Clancy and Ullrich (Cereal Chem. 65:428-430, 1988). The criteria used to quantify individual quality factors are listed in Table A1.

Overall Rank Values were ordered from low to high based on their Quality Scores. A rank of '1' was assigned to the sample with the best quality score.

Quality Score Parameters for 2- and 6-rowed barleys

Quality parameter	2-rowed		6-rowed	
	condition	score	condition	score
Kernel Weight (mg)	> 42.0	5	> 32.0	5
	40.1–42.0	4	30.1–32.0	4
	38.1–40.0	2	28.1–30.0	2
	≤ 38.0	0	≤ 28.0	0
on 6/64 " (%)	≥ 90.0	5	≥ 77.0	5
	85.0–89.9	3	70.0–76.9	3
	< 85.0	0	< 70.0	0
Malt Extract (% db)	≥ 81.0	10	≥ 80.0	10
	79.5–80.9	7	79.0–79.9	7
	78.0–79.4	4	78.0–78.9	4
	< 78.0	0	< 78.0	0
Wort Clarity 3=hazy 2=slightly hazy 1=clear	= 3	0	= 3	0
	= 2	1	= 2	1
	= 1	2	= 1	2
	1=clear			
Barley Protein (% db)	≥ 13.5	0	≥ 14.0	0
	12.6–13.4	5	12.6–13.9	5
	10.1–12.5	10	10.6–12.5	10
	≤ 10.0	5	≤ 10.5	5
Wort Protein (% db)	> 6.0	0	> 6.0	0
	5.1–6.0	3	5.3–6.0	3
	4.4–5.0	7	4.6–5.2	7
	< 4.4	0	< 4.6	0
S/T (Soluble/Total Protein, % db)	> 46.0	0	> 46.0	0
	40.0–46.0	5	40.0–46.0	5
	< 40.0	0	< 40.0	0
DP (Diastatic Power, ° ASBC)	> 140.0	0	> 170.0	0
	130.1–140.0	4	160.1–170.0	4
	110.0–130.0	7	140.0–160.0	7
	95.0–109.9	4	130.0–139.9	4
	< 95.0	0	< 130.0	0
Alpha-amylase (20° DU)	> 55.0	0	> 60.0	0
	50.1–55.0	4	55.1–60.0	4
	40.0–50.0	7	45.0–55.0	7
	35.0–39.9	4	40.0–44.9	4
	< 35.0	0	< 40.0	0
Beta-glucan (ppm)	< 40	0	< 40	0
	40–80	3	40–80	3
	80 – 150	7	80 – 150	7
	150 – 300	3	150 – 300	3
	> 300	0	> 300	0